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Management of In-store Replenishment Systems:  
An exploratory study of European retailers

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## **Abstract**

This thesis explores the management of in-store replenishment systems in retail companies. Making products available is at the core of the retail business. When a product is out-of-stock, consumers respond in different ways, eventually resulting in a potential loss for retailer and manufacturer.

The awareness of potentially lost sales due to out-of-stocks led to industry and academic research about the occurrence and root causes of stockouts. As a consequence, the retail supply chain became highly optimised. Nevertheless, research focussed on product availability up to the retailer's distribution centre; the last part of the retail supply chain –from arrival at the store to the shelf– was largely ignored. Notwithstanding, research into the root causes of out-of-stocks shows that availability drops during these last 50 metres and many stockouts are caused within the store.

Despite its significant impact towards on-shelf availability, logistics processes at store level have so far received little attention. With store replenishment mainly conducted manually and store management being a main contributor to store performance, this thesis considers the question about how humans and replenishment systems interact in the last 50 metres of the retail supply chain.

To answer this question, six grocery and non-grocery retailers from the UK, Germany and Austria were sampled. At each case, semi-structured interviews with store managers, shop floor employees and headquarter managers were conducted at their workplace. The transcribed interviews were analysed using a reconstructive method based on a social constructionist approach.

The thesis identifies four types of replenishment interaction, which can be categorised in regards to the amount of interaction between employees and replenishment system, and the impact that store employees can have onto the system. Retail store replenishment interaction can be typed as store-based, customer care focus, operations focus, or outlet.

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## List of Abbreviations

CPFR	Collaborative Planning and Forecasting
CSA	Customer Service Assistant
DC	Distribution Centre
DIY	Do-It-Yourself
DSD	Direct Store Delivery
ECR	Efficient Consumer Response
EDI	Electronic Data Interchange
ERP	Enterprise Resource Planning
FIFO	First In – First Out
FT	Full-Time
FTE	Full-Time Equivalent
GDP	Gross Domestic Product
IT	Information Technology
NDC	National Distribution Centre
OOS	Out-of-Stock
OSA	On-Shelf Availability
OTIF	On-Time In-Full
POS	Point of Sale
PT	Part-Time
QR	Quick Response
RDC	Regional Distribution Centre
RFID	Radio Frequency Identification
SKU	Stock Keeping Unit

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# 1. INTRODUCTION

This thesis aims to explore and investigate the way retailers manage their in-store replenishment operations. Despite being an essential part of the retail supply chain, logistics operations in stores have not received much attention by researchers in the past.

The thesis starts from the point that the availability of products is an essential criterion for the measurement of successful customer service in retailing (Fernie, 2004). By adding to good customer service and lowering costs on the logistics side, a well managed supply chain adds is a major competitive advantage for retailers (Grant, 2006).

In the delivery of logistics customer service several trade-offs exist between the logistics cost components. In terms of product availability the main trade-off lies between the costs to make the product physically available on the one hand, and lost sales on the other hand if the product is not available for customers. With an increase in service levels, the marginal costs increase too. It can therefore be assumed that the economically optimal level of product availability in retailing is usually below one hundred percent (Ballou, 1992; Trautrim and Grant, 2007).

The perceived customer service may be increased through the availability of appropriate substitutes (Grant, 2006). In the case of an out-of-stock (OOS) consumers can respond in five different ways: They can change the store, delay their purchase, substitute with another brand or within the same brand, or they might not purchase the item at all (Corsten and Gruen, 2003). The response to an OOS depends on the characteristics of the product, the consumer and the situation. These three factors can cause costs regarding substitution, transaction or the missed opportunity on the consumer's side. Depending on these costs to the individual consumer, the OOS reaction will vary (Campo et al., 2000).

Accordingly, for retailers and manufacturers the financial loss associated with an OOS varies too. It is not only the immediate reaction that causes a financial loss, but also the short and long-term effect on market share (Schary and Becker, 1978). Research in the area of on-shelf availability (OSA) therefore developed into two streams: the marketing side that explored consumer behaviour in the case of an OOS; and the retail logistics side focussing on investigating the causes for OOS.

The research to improve OSA was mostly looking at the product availability at the retail distribution network and collaboration between suppliers and retailers. Whilst this development increased the availability of products at this part of the supply chain, the investigation of retail supply chain processes often ended at the point when the product arrived at store. However, being at the store does not necessarily result in the product being available to the consumer (ECR Europe, 2003).

Industry research has shown not only that the level of product availability decreases on the way from arrival at store to the shelf; it also claims that most OOS is actually caused at store level. By interviewing store managers, research by McKinnon et al. (2007) developed a list of root causes for OOS at store level. Although many of them may be outside the store's control, they provide an indication for crucial areas regarding OSA in store operations. A study by Fernie and Grant (2008) showed that even the physical process of bringing products from the backstore to the shelf is a major factor for OOS. Research by Gruen and Corsten (2008) suggests failure in this process stands for about a quarter of OOS alone.

Next to their importance for service delivery, store processes also represent a large share of costs in retail operations. The performance of in-store processes, both in terms of input and output, varies strongly between retailers (Broekmeulen et al., 2004; Thonemann et al., 2005). Research on store execution portrays human resources as a main influence on the performance of retail stores. Particularly the store managers selection and workforce

characteristics have a large impact on the success of store operations (Ton, 2002; Human Synergistics Inc, 1986; Salmon, 1989).

Despite the effect of in-store logistics operations on the performance of retailers, the only empirical studies so far in this area are a case study by Kotzab and Teller (2005) that maps the in-store processes for the segment dairy products at one retailer; and a study by Aastrup and Kotzab (2009) at independent retailers, which may be assumed to have significantly different features compared to stores that are run by retail chains. Nevertheless, they confirm that store ordering and fulfilment at store level are main contributors to OOS.

This thesis further explores the area of in-store logistics processes, particularly human resources that are essential to run store operations. The performance of store employees is also related to the way they are managed and supported in their work environment. The study therefore asks the question how do humans and systems interact at the last 50 metres of the retail supply chain? In order to answer this question, the study needs to establish what in-store logistics processes actually look like; where humans and systems interact at the replenishment process; which factors shape these replenishment systems; and how much impact the employees can have on the system.

After having outlined the existing literature base relevant to in-store logistics processes and having identified the research gap, the thesis goes into the selection of an appropriate methodology to answer the research questions.

The existence of little previous research into in-store logistics processes and the identified research questions give the study an exploratory nature, which leads to the selection of an inductive and qualitative approach. The thesis presents the main philosophical concepts in research methodology, before it identifies multiple case studies as a suitable research methodology to answer the research question.

After having looked at the research methodology, chapter 3 continues with the presentation of the data analysis method that is used. Looking at the interaction

between humans and systems at store logistics operations, the study is interested in the perception of the involved players. Consequently, a data analysis method from a social constructionist stand is applied.

The data analysis method used in the study is called documentary method and was originally developed in the education sciences. It takes the perspective that our interpretation of the world is constructed from our common social understandings and perceptions. Hence, the collected data needs to be deconstructed for making it accessible and to extract knowledge from it. This process happens in three steps: Firstly, it looks at the content in the rephrasing analysis. Secondly, the reflective analysis investigates the discourse. Lastly, these two steps are brought together to find out about commonalities and differences between the cases and to develop typologies from them.

Corresponding to its qualitative stand, the thesis' structure has a comparably short outline of the literature relevant to the management of in-store logistics processes. Instead much room is given to the analysis of the qualitative data to increase trackability. The thesis also portrays the research environment and the cases extensively to match qualitative research quality measures.

The proposed interview guide was tested in a pilot study of retail employees. For the main study, semi-structured interviews were conducted at six retailers in Austria, Germany and the UK. Interviews were arranged with senior management at the central organisation of the retail company, store management and shop floor employees.

With most research in retail logistics has previously been made in the grocery sector, this study included three grocery and three non-grocery retailers. To make comparisons between the involved retailers, the sample needs to show external heterogeneity, which is achieved through the inclusion of different sectors and countries. After the development of the interview guide in chapter 4, the thesis proceeds with portraying the case contexts in chapter 5.

Next, chapter 6 provides an analysis of the transcribed interviews. The analysis begins by presenting the individual case settings and the data collection

process at the participating retailers. The data analysis itself is structured into the analysis of each case on its own, i.e. a within-case analysis. This is followed by a cross-case analysis, which compares the cases and extracts commonalities and differences. The data analysis chapter finishes with the presentation of the parts of the in-store replenishment system that affect the employees and also the factors that influence the management of it. Additionally, it extracts a typology of retailers in relation to the interaction between retail employees and the in-store replenishment system.

In the conclusions chapter 7 the research questions are answered and the results of the study are put into the context of the study. It thereby shows the contribution of the study to the body of knowledge, methodology and practice. The conclusions also contain managerial implications of the results; before the thesis finishes with the study's limitations and the opportunities for further research.

## **2. RESEARCH BACKGROUND**

This chapter firstly introduces the background literature and reviews our current state of knowledge in this area before it identifies the gaps in the body of knowledge that this research project is investigating. It begins by explaining the general concepts of logistics and supply chain management as a service. Next, it introduces retail logistics and proceeds to discuss the phenomena of on-shelf availability (OSA) and out-of-stocks (OOS).

Identifying logistics processes in stores is a main factor of logistics performance in retailing, the chapter thus then explains the current state of in-store execution. With human resources being a major input in store operations, the chapter then considers the management of human resources in retail stores and the interaction of employees with technological and managerial systems.

After having presented these relevant literature streams, the chapter concludes with the extraction of the gap in the body of knowledge and the according research questions that are needed to fill this gap.

### **2.1 Literature Review**

This literature review starts by defining the distinction between logistics and supply chain. It introduces the main performance factors and the development of retail logistics. Afterwards it looks at logistics as a service and explains the main concepts within that area.

It then takes a focus on on-shelf availability. It presents the potential impact of an OOS and shows the aspects and importance of product availability. Logistics at store level are identified as a main factor regarding on-shelf availability and the literature review therefore portrays the sparse literature that exists about in-store processes and store execution in more detail. Considering that store processes mostly involve people and systems, socio-technical



systems and the retail workplace are discussed before the literature review concludes, leading into the identification of the gap in the body of knowledge.

### 2.1.1 Definitions

The terms 'supply chain management' and 'logistics' are frequently used interchangeably. Nevertheless they have different meanings and describe different areas of business operations. The definitions used in this document come from the Council of Supply Chain Management Professionals, a global US-based organisation with around 9,000 members working in supply chain management. It defines logistics management as *"that part of supply chain management that plans, implements, and controls the efficient, effective forward and reverse flow and storage of goods, services and related information between the point of origin and the point of consumption in order to meet customers' requirements"* (CSCMP, 2008).

Logistics is seen as a part of supply chain management, which itself *"encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across companies"* (CSCMP, 2008).

The major difference between the two terms is that supply chain management takes a holistic view over the entire supply chain regardless of company borders, while logistics management is more concerned about the flow of goods and liaises with other areas and functions only to support this task. Logistics is thus a subordinated part of supply chain management.

### **2.1.2 Performance Impact of Logistics in Retail**

The issue of logistics in a civil or business background was first mentioned in 1901 in a publication that dealt with the transport of farm products to market. In the following time logistics kept focused on the meaning of transport. From the 1970s a customer focus evolved and logistics became a competitive differentiator (Kent and Flint, 1997).

Current understandings of logistics management and supply chain management are relatively new in the business world. These concepts developed during the last decade of the 20<sup>th</sup> century. Before then, logistics concentrated on the physical distribution of goods in the company and making them available to customers. The buffering of long lead-times required inventory to be stockpiled. With the advent of modern information technology and the consequent faster availability of information, order lead times (the time involved from the placement of an order to the receipt of the shipment) decreased (Bowersox et al., 2002; Vitasek, 2006).

At the same time the retail sector started to consolidate and retail power concentrated. This had two consequences: Firstly, the retailers took control of the supply chain from the manufacturers and could therefore force suppliers to deliver according to demand rather than according to production schedules. With the rise of large and often stock exchange listed retail companies, retailers started to optimise their operations. Secondly, when retailers achieved a significant market share, there was little extra buying power to be gained from further growth. This led to even more attention towards the optimisation of operations and the awareness of costs for inventory and handling increased (Seth and Randall, 2001; Grant et al., 2006).

Logistics account for a significant share of total retail costs, which are usually higher than for manufacturing companies. Retail logistics costs usually take between 10 to 30% of total costs (Kotzab, 2005a). Thus, better performing retailers can achieve a competitive cost advantage (ibid.).

Saving costs can have a much stronger leverage effect on profit than additional sales, particularly in retailing which is traditionally a low margin business. Stock and Lambert (2001) calculated that in the case of a 2% net profit margin a saving of USD 2,000 is equivalent to a sales increase of USD 100,000. Thus a focus on logistics is vital for a retailer's success. Today logistics is considered as a major factor of success in retailing alongside customer orientation, location and human resources (Kotzab, 2004).

### **2.1.3 Retail Logistics**

In the mid 1980s retailers started taking control of the supply chain by setting up regional distribution centres (RDCs), which were either controlled by a third party or themselves. Suppliers deliver into these RDCs and the retailer then operates the delivery to its stores in a more suitable lot size. This structural change led to more efficiency in retail logistics compared to direct store delivery (DSD) as the stocks were centralised at the RDC (Ferne et al., 2000).

The trend towards centralisation was strengthened by the shift to composite distribution, which means that temperature controlled products are handled through one multi-temperature system of warehouses and vehicles. This led to a significant reduction of warehouses and increased the frequency of composite deliveries to the stores (Smith and Sparks, 2004). With the availability of electronic data interchange (EDI) from the last decade of the 20<sup>th</sup> century communication along the supply chain became faster. Retailers began to apply just-in-time strategies known from the manufacturing industry. Information can be processed quicker through the supply chain and reduces buffer stock. Stockless distribution centres were developed, which only cross-docks good without holding any inventory themselves (Ferne et al., 2000).

In accordance with the new supply chain thinking, suppliers were included to shorten order and delivery lead times. Collaboration between suppliers and retailers was extended many new collaborative replenishment systems were developed, namely Quick Response (QR), Efficient Consumer Response (ECR)

and Collaborative Planning and Forecasting (CPFR)<sup>1</sup>. Additionally the retailers now have the power to make suppliers participate in these systems. Often enough retailers are using a lot of pressure to force their suppliers into some form of 'collaboration' (Towill, 2005; Fernie et al., 2000; Burt and Sparks, 2003b; Competition Commission, 2008).

Overall, logistics in the retail sector became much faster and the power has shifted from the suppliers to the retailers during the last three decades. This effect is likely to go on as retail power seems to further concentrate (Burt and Sparks, 2003b).

### **2.1.3 Logistics Customer Service**

Efficient logistics and supply chain management is a major competitive advantage for retailers. Previously it was shown how good retail logistics contribute on the cost side. Nevertheless, good logistics also acts on the sales side. The way logistics can add to customer service and retail success will be shown in this chapter.

Grant et al. (2006: p. 36) define customer service as *"... a process which takes place between the buyer, seller and third party. The process results in value added to the product or service exchanged. This value added in the exchange process might be short term as in a single transaction or longer term as in a contractual relationship. The value added is also shared, in that each of the parties to the transaction or contract is better off at the completion of the transaction than it was before the transaction took place. Thus, in a process view: Customer service is a process for providing significant value-added benefits to the supply chain in a cost-effective way."*

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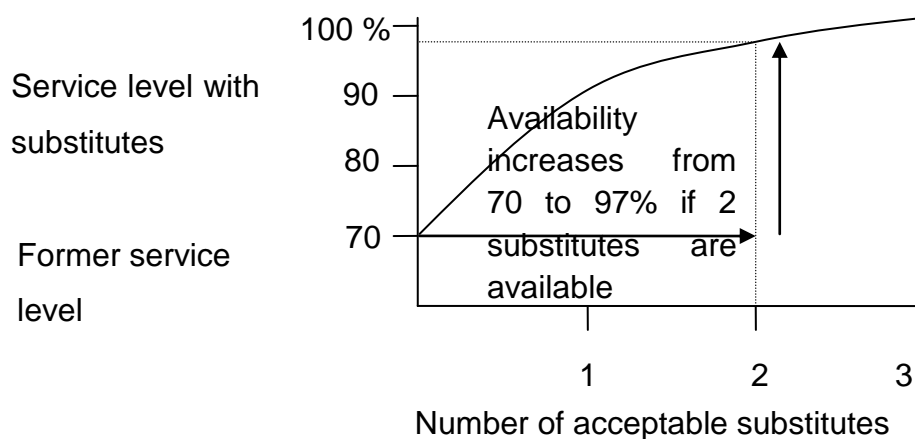
<sup>1</sup> QR, ECR and CPFR emerged in this order with the progress of available IT solutions. They are logistics strategies based on collaboration and information-sharing among the players in the retail supply chain. The level of collaboration, integration and coverage of the supply chain increases throughout these concepts (Kotzab, 2005b; Fernie, 2004).

### 2.1.3.1 Customer Service Elements

Customer services are usually categorised according to a customer's purchasing experience into pre-transaction elements, transaction elements and post-transaction elements. Examples for customer service elements at a pre-transactional stage are accessibility, organisation structure, system flexibility and the customer service policy. Transactional elements relate to the point of sale (POS). Time to deliver, availability of the product, on-time in-full (OTIF) performance and tracing tools are examples for this part of the selling process. Post-transaction elements are often called after-sales services, which are the availability of spare parts, warranty, customer complaints and repair services. Businesses have to identify the elements which are most important to their customers (Christopher, 2005; Grant et al., 2006).

As this research project is looking at the availability of products, the concept of increasing the level of customer service through appropriate substitutes is introduced. Figure 1 illustrates an example of the increase of the service level through available substitutes. Assuming that customers perceive available substitutes as appropriate, the risk that all of them are OOS may be reduced compared to the OOS risk for only one product.

**Figure 1 Impact of Product Substitution on Customer Service Level**



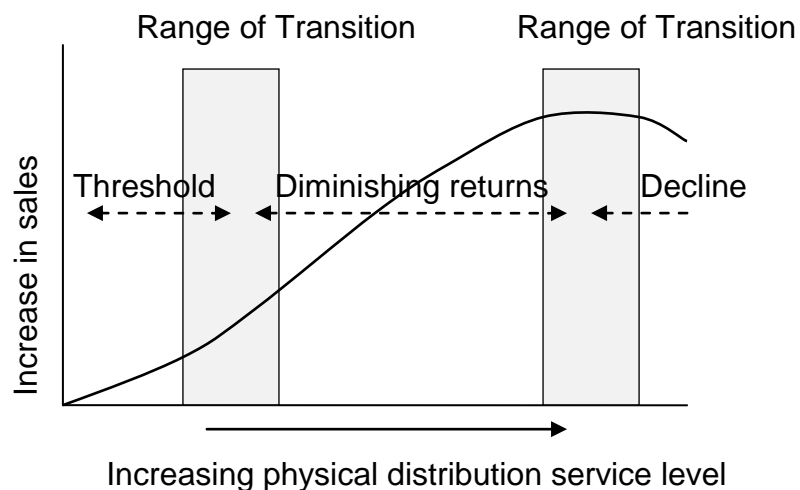
Source: Grant et al. (2006: p.40)

Even if service levels can be improved by available substitutes; the difficulty is to figure out which substitutes are considered appropriate by the customer. The customer's point of view will vary strongly and depend on the factors influencing the overall purchasing decision. However, dissatisfaction might be avoided when suitable substitutes can be offered for a non-available product or service (Grant et al., 2006).

### 2.1.3.2 Cost-Service Relationship

The decision of setting a certain level of logistics customer service requires the information how much sales would change accordingly. Ballou (1992) generalises how sales are likely going to change. Figure 2 shows the change on sales when service is improved above competitors' levels, assuming that price and quality are equal.

**Figure 2 Logistics Service-Sales Relationship**



Source: Ballou (1992: p.92)

There are three stages in Figure 2: threshold, diminishing returns, and decline. When a company reaches the threshold level and the service goes above

competitors' levels it can expect to gain extra sales. It is within the area of diminishing returns that most companies operate their logistics systems. Sales keep on increasing with a higher service level, but the increase rate slows down.

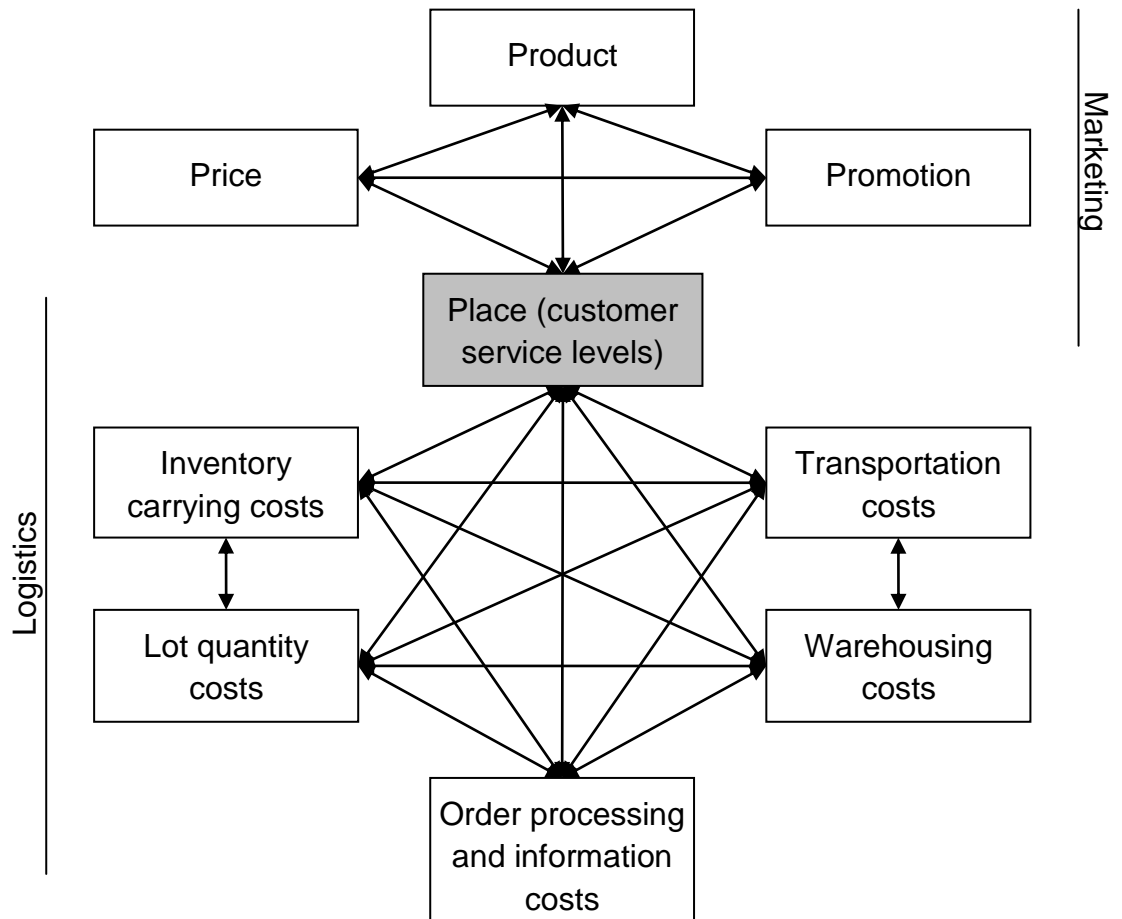
Eventually service levels can be increased too far, beyond the point where customers actually benefit from it. Too much effort to monitor inventory and process information can be required, which results in higher costs. However, customers might want to avoid such a high service level due to the attached costs and thus the sales increase reduces. The appropriate service level will therefore depend on the customers' expectations and requirements (Ballou, 1992; Yap and Sweeney, 2007; Zeithaml et al., 1996).

#### **2.1.3.3 Customer Service Trade-Offs**

Customer service is an area which requires logistics and marketing to become involved with one another. The marketing mix consists of the traditional '4Ps': price, product, promotion and place. The 'place' relates to the distribution channel. Hence, this is where logistics interacts with marketing. The 'place' is set by a strategic marketing decision, which service level should be provided and which distribution channels are to be chosen. From the logistics side costs will influence that decision and feed into the 4Ps as shown in Figure 3. Marketing and logistics are linked together as parts of a combined system. The failing of logistics and the consequent product unavailability has the potential to offset any marketing efforts (Schary and Becker, 1978).

The customer service level is a trade-off between the benefits in the marketing mix and the costs in logistics. An increase in the service would regularly result in higher logistics costs. However these extra costs have to pay off by additional revenues to maximise a company's overall profits.

**Figure 3 Marketing-Logistics Interaction in the 4P**

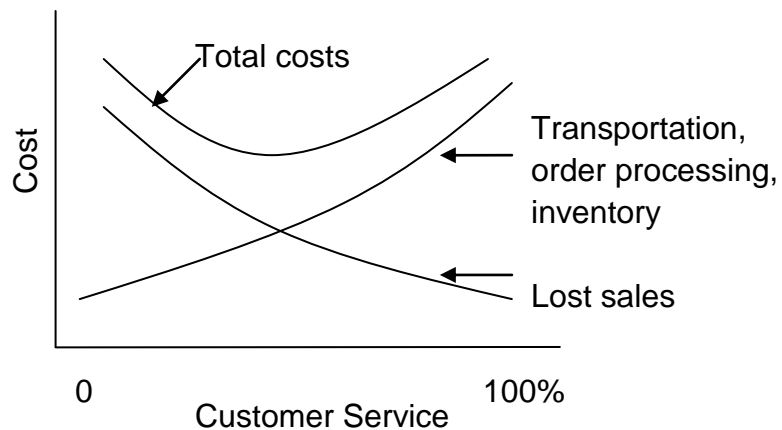


Source: Grant et al. (2006: p. 45), adapted from Lambert (1976)

An optimal service level, where a company achieves the highest revenues, will be a trade-off between extra sales due to higher customer service and extra costs to provide that service. Such an optimum level is assumed to be below 100% and the theoretical framework is shown in Figure 4 (Ballou, 1992).



**Figure 4 Setting the Optimal Customer Service Level**



Source: Ballou (1992: p. 42)

The retail company Marks & Spencer actually undertook a pilot study to investigate a service level of 100% in one of its stores. The way to raise availability of products was simply overstocking and pushing inventory into the store. This generated additional sales, but the benefit of those extra sales was overcompensated by the increasing wastage. On top of that, customers even complained after some time that products were not as fresh as they used to be and customers could not do their weekly shopping at the store anymore. Hence, a service level decision can only be made considering all occurring costs (Trautrim and Grant, 2007).

The graph in Figure 4 simplifies the decision making process for customer service levels. Logistics can also help to maintain customer loyalty. It is roughly five times more expensive to win a new customer than keeping an existing one (Ballou, 1992). On top of that loyal customers buy more than new customers and increase their spending over time. Logistics that satisfies customers is hence capable of contributing to a company's performance by enhancing customer loyalty (ibid.).

#### **2.1.4 On-Shelf Availability and Out-of-Stocks**

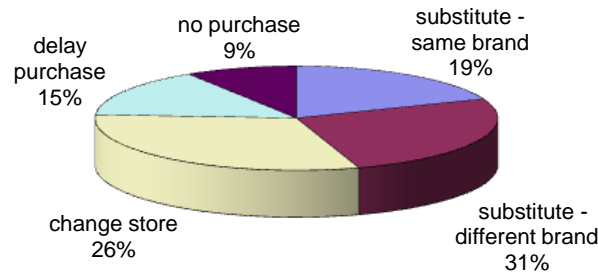
A retailer's aim is to make products available to consumers without manipulating the product (Kotzab, 2004). Once a consumer likes to buy a certain product but cannot find it at the retailer's store, the retailer has basically failed to fulfil its major task. Furthermore, the question as to what impact that is going to have towards the consumer and the retailer is a major concern. Consumers might 'vote with their feet' and shop somewhere else. The availability of products even became a public concern and retailers which were caught to provide poor OSA were castigated by the media (Fletcher, 2004).

Assuming that retailers aim for a service level that balances customer satisfaction and costs, knowledge about consumer behaviour is fundamental to considerations towards stock replenishment. The way consumers respond to stockouts, why they occur and how retailers can avoid their occurrence will be explained in this chapter.

##### **2.1.4.1 Consumers Response to Out-of-Stocks**

When facing an OOS, consumers are confronted with several factors influencing their behaviour. According to Campo et al. (2000), every consumer is firstly affected by the characteristics of the product, the situation and its personality. In case of an OOS such a consumer is then facing potential costs of substitution, transaction and opportunity. Depending on characteristics and the costs, the consumer is making a decision how to respond to the OOS. In a meta-study Corsten and Gruen (2003) examined the issue of stockouts, which are illustrated in Figure 5. The numbers derive from the amalgamation of studies across several categories in 29 different countries.

**Figure 5 Consumer Responses to Stockouts**



Source: Corsten and Gruen (2003: p. 610)

Although some regional variances were noticed, a general pattern emerges in the Corsten and Gruen (2003) meta-study. In summary, consumers react in the following manner: 31% buy at another store, 26% substitute with another brand, 19% substitute within the same brand, 15% delay the purchase and 9% do not purchase the item at all. Consequently store switching and purchase refusing sum up for a direct loss of 40% of the potential sale. As the 15% purchase delay leads to an additional risk for the purchase and the substitution is regularly happening with a lower priced product it can be roughly estimated that 50% of potential sales are lost (Magnus, 2007; Thonemann et al., 2005). Nevertheless, the variation between individual retail companies remains unknown from these studies. Depending on the social mix of customers and others factors, such as presented in Figure 6 below, the impact of OOS reactions may differ among retailers.

OOS does not only influence the immediate purchase decision, it also impacts the short-term and long-term market share of a product. Schary and Becker (1978) investigated the case of OOS for several beer brands in Seattle due to strike actions in the distribution system. As one would assume, the brands that were still available during the strike secured strong gains in market share.

Further, they maintained some of their gained advantage in the long run as well. The effect of product availability in this case was even stronger than the effect of price changes.

Hence, customer loyalty and market share are not only determined by demand but also by the success of product supply. Consequently, the financial impact of OOS and the negative impact on the marketing mix can be assumed being bigger than only the present lost sale. Nevertheless, Schary and Becker's (1978) 'quasi-experiment' took products off the shelf for an extended period of time and consumers therefore had the time to make themselves comfortable with a new product choice. Common product unavailability however might usually be shorter and consumers only have to abstain from their prior first choice for a single purchase decision. Additionally, the strike affected all retailers and store switching was therefore not an option.

Motes and Castleberry (1985) disagreed regarding a long-term shift of market share due to an OOS. They created an experimental situation in which branded crisps and cereals were unavailable. The unavailable products did not lose significant market share and consumers returned to their regular choices after the OOS was over. However, their experiment was restricted by several limitations and only describes consumer patterns rather than explaining them.

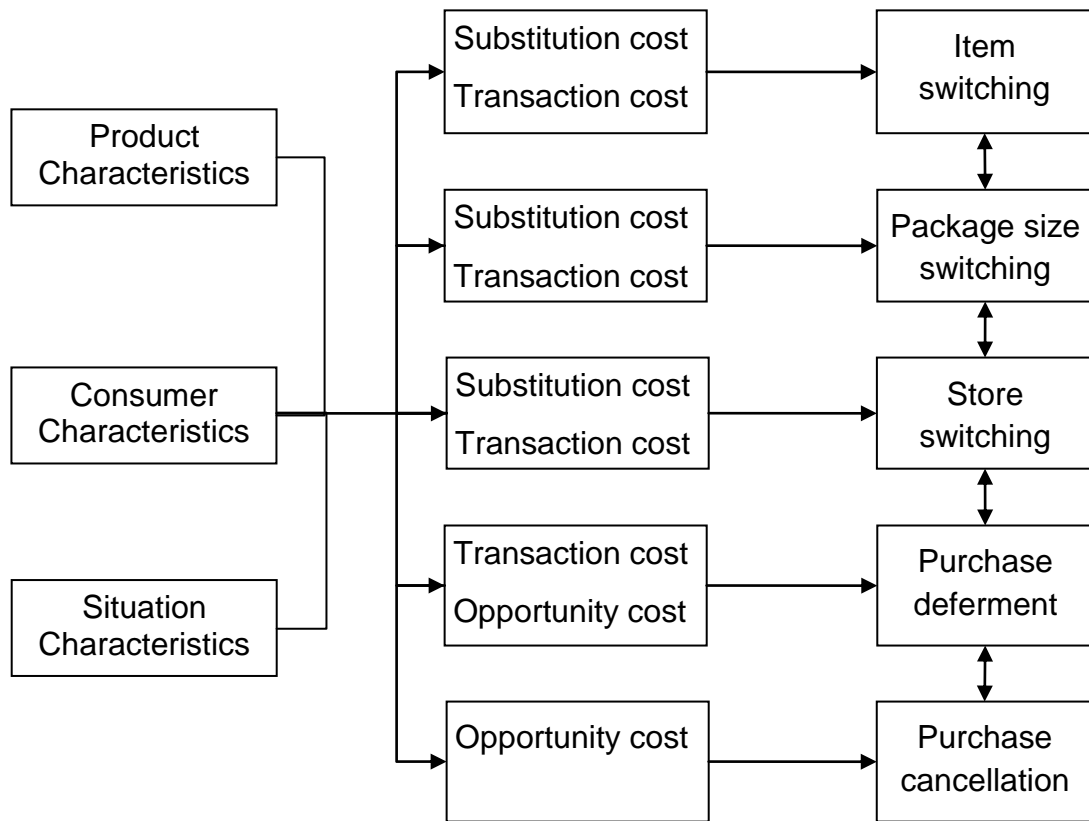
Most early studies of that time such as Walter and Grabner (1975), Schary and Becker (1978), Schary and Christopher (1979) and Motes and Castleberry (1985) relied on data from artificial experiments that excluded the entire shopping situation or relied on consumer responses. Even though they were conducted in a robust way for their time, they had significant weaknesses compared to more recent industry research being based on consumer and POS data (Trautrim et al., 2009; Institute of Grocery Distribution, 2007).

Zinn and Liu (2008) identified a gap between a consumer's intended response to OOS and their real response. The number of people who planned to delay their purchase actually did so in less than half the cases. Only about 13% of respondents intended to leave the store and not buying the product at all. But after following up all respondents, 44% of those facing a stockout actually

cancelled the purchase. Even though the study reveals a significant gap between intended and actual OOS response, it uses interviews to collect data. Interviews of shoppers show the disadvantage that time poor consumers might have refused to participate. Also the question about intended behaviour after the shopping exit might still be influenced by hedonic purchase patterns. After leaving the store, consumers can look more rationale on the planned purchase and not making the extra effort to find a product somewhere else. Understanding how consumers respond to OOS leads to looking at what causes their different reactions. The individual considerations for consumers in an OOS situation are outlined in the following paragraphs.

#### **2.1.4.2 Common Factors towards OOS Response**

Campo et al. (2000) provided a framework as shown in Figure 6 of three determinants affecting the consumers costs in an OOS. They identified product-, consumer- and situation-related factors. Product related issues can be household-invariant like the number of a category's items offered within a store. They differ by household like the frequency and number of consumption. Consumer-related variables describe the household customs like general shopping characteristics or lifestyle. Consumer- and product-related characteristics become stable over time. In contrast to that, situation-related variables refer to the details of every individual purchase decision (Campo et al., 2000).

**Figure 6 Cost Components for OOS Reactions**

Source: Campo et al. (2000: p. 224)

A consumer faces three cost types for his decision: substitution costs, transaction costs and/or opportunity costs. Item switching means that the consumer substitutes the product within or outside the brand. As consumption still takes place on the same level, the consumer avoids any opportunity costs. Substitution costs depend on the availability of an acceptable substitute. Consumers with a high brand loyalty will feel a higher cost for substitution than consumers who do not mind to switch (Verbeke et al., 1998; Campo et al., 2000).

The substitution costs for a promotional item OOS can be expected higher than for a regular purchase. Transaction costs are mostly caused by the effort to identify the OOS and finding an acceptable alternative. These costs strongly depend on the involvement into the decision making. Transaction costs will

therefore be higher for baby nutrition than for toilet paper. This also correlates with the item loyalty. Consumers who were loyal to a product in the past will have to spend some effort to gather information about available substitutes. Consumers who switched frequently in the past will be informed about alternatives and their transaction costs are lower, because they are prepared for the decision on a substitute (Campo et al., 2000).

The switching of the pack size also does not cause any opportunity costs. Substitution costs are relatively low, as the consumer still gets his favourite product. Transaction costs will result from extra handling or more storage. Campo et al. (2000) expect switching from a small to a large package size to be more costly than the other way round.

By switching the store the consumer has again no opportunity costs, as he will be able to purchase and consume the preferred product. The store substitution costs depend on the availability of suitable alternative stores nearby. As the consumers' originally selected store was the first choice option, store substitution costs occur for a lower store attractiveness of the substitute store. Store substitution costs are higher for consumers who usually buy own label products, because these products cannot be found in another retailer's store. Customers loyal to the national brand will find it therefore easier to switch the store, as their brand might be available at almost every retailer (Campo et al., 2000).

Transaction costs for store switching are strongly consumer-related. Additional transportation, travelling to the other store, consumption of time and searching costs will occur. Similarly, item switching searching costs will be lower for consumers who regularly change the store. The additional time consumption will be less costly for people who tend to enjoy shopping. Consumers who are time-constrained will experience it more costly to change the store (Campo et al., 2000). Consumers have little awareness of their own logistics costs. They tend not to consider the total costs which occur by changing the store (Teller et al., 2006).

In the case of a postponement or cancellation of the purchase the consumer will not face any substitution costs. Cancellation also does not cause any transaction costs. Transaction costs in the case of deferment will depend on the consumer's mobility and the distance to the store, the consumer might also return to the shop earlier than he/she usually would. Consumers who buy smaller baskets but more frequent will more likely postpone their purchase than consumers who make only one weekly shopping trip. Both options, cancellation and deferment, lead to opportunity costs, because the consumer loses the opportunity of consumption or at least increases his risk to run short of the product. The level of opportunity costs depend on the involvement and therefore importance of the purchase (Campo et al., 2000).

#### **2.1.4.3 Individual Factors towards OOS Response**

Knowing about the impact of stockouts may influence the retailer's ambition to prevent them. The differences in customer responses between categories and shoppers lead to individual considerations for retail companies and consequently have an effect on the design of the replenishment system.

The previously mentioned meta-study by Corsten and Gruen (2003) shows not only global figures, but also points out that the response to OOS does not differ much between cultures but is strongly dependent on the product. This is backed by industry research, which shows that 60% of consumers switch stores for their favourite razor blades but only 13% would make that effort for a manual toothbrush (Acton, 2008). An empirical study by Verbeke et al. (1998) about consumer response to preferred brand OOS proves that branding affects OOS reactions. Customers of strong brands like Coke switched the store much more often in case of an OOS than customers of low profile brands.

Furthermore, consumers change their behaviour if stockouts occur more frequently. Whilst on average more than two-third of consumers are willing to substitute at the first stockout event, this changes to a half-half ratio at the



second time and leaves only less than a third of consumers willing to substitute when the stockout happens a third time (ECR Europe, 2003).

Drilling down into a single category, a study by van Woensel et al. (2007) looked at consumer responses to stockouts of in-store baked bread. He explicitly demonstrated the fact that perishable products have to be managed differently from products with longer shelf lives. The wastage factor is very important in that field, as all products left over when the shops closed have to be disposed. The major trade-off for the retailer in this case consisted of wastage costs versus lost sales. The availability of products declined over the day and OOS peaked during the last opening hour with almost 30% of products unavailable. The substitution behaviour changes dramatically during the day. Whilst only three-quarters of consumers are willing to substitute at the morning hours this reaches 90% after work hours and goes up to 100% during the last opening hour of the shops. On average 10% would buy later, 6% shop at another store and 84% substitute.

A study conducted by Trautrim and Grant (2007) for ECR UK also revealed that perishable and non-perishable items have to be managed differently regarding OSA. Not only differ supply patterns of the products, such as shorter shelf life and temperature control requirements; but also customer groups and demand varies strongly. The study investigated OSA in the juice sector. Suppliers and retailers managed ambient and chilled juices in separate categories. Even though a potential substitution of an OOS chilled juice with an ambient juice sounds theoretically likely consumers did not substitute across the two categories. An explanation for this might be that consumers with high disposable incomes and a tendency towards supposedly fresh and healthy chilled juices do not consider ambient juices as an appropriate substitute. Thus, different products have to be investigated individually considering their particular supply and demand patterns (Fernie et al., 2008).

The results of the study by van Woensel et al. (2007) about perishable products differs a lot from Corsten and Gruen (2003) who investigated non-perishable items. The stores in the van Woensel study listed 208 stock keeping units

(SKUs) in the bread range. This might have also increased the amount of substitution, as the likelihood of an appropriate substitute can be assumed relatively high, even when 30% are OOS. Another interesting finding from the study is the gap between the consumers' answers what they would do and what they really did. Eighty-four per cent of consumers answered they would substitute with another product if they did not find their favourite bread, but in reality 90% did substitute. Also was the interview participation reduced during rush hours (e.g. lunch time), which means that there are probably more time rich consumers in the survey than in the shopping population who have the time resources for store switching.

The effects of consumer demographics towards the response to OOS were also investigated by Zinn and Liu (2001). They used questionnaires at the store exit asking about experienced stockouts as well as certain variables. Responses to OOS were limited to substitution, delay the purchase or leave the store. The used variables were about situational factors, consumer characteristics, perceived store characteristics and consumer demographics. They identified four factors that lead shoppers to substitute: store prices, urgency of purchase, brand loyalty and being upset about the OOS. Delaying the purchase was also influenced by price and urgency; but further by the factors surprise (about the stockout) and the existence of a pre-shopping agenda. However, all responses have to be seen in the light of Zinn and Liu (2008) about differences between intended and actual behaviour in OOS situations. One might assume that the included variable of how consumers value their own time influences the shoppers' response. Such a correlation could not be confirmed in the study. That agrees with Teller et al. (2006) about consumer logistics, stating that consumers actually do not evaluate the effort for extra shopping trips in a rational way.

Campo et al. (2003) wanted to avoid potentially biased answers from consumers and use scanner data to investigate how consumers really react. They analyse one year's data of purchasing decisions in the margarine and cereals category at a European retailer. With many seasonal influences in

shopping behaviour they used a period of seven weeks with relatively stable consumption. It could be argued if the results are also valid for peak periods and whether they can be generalised over every period of the year.

It is also looked at the different substitution strategies used by consumers in case of a stockout. Studies usually only consider whether consumers substitute and what product they substitute with. Furthermore, Campo et al. (2003) additionally looked at the quantity of the purchased substitute. Consumers can be assumed to be unsure about a chosen alternative, if they have not used it before. Thus, the purchased quantity could be lower than for the regular choice.

No such protection behaviour was found for cereals, where substitutes with the same flavour exist and consumers would usually seek variety anyway and were hence familiar with alternatives. But an effect of buying less was recognised in the margarine category. As margarine is normally only bought in small quantities anyway, the effect is small. For this study it happened that the losses for manufacturers could be quite substantial, whilst the losses for retailers were lower than expected. However, that heavily relies on the observed category and the number of brand lines. The margarine category in the study included a national brand with no varieties of the core product. An OOS therefore led to a huge impact for the manufacturer, as consumers were not able to substitute within the brand. In contrast to cereals OOS in margarine also resulted in consumers stocking the product up after the OOS-period. This effect is explained by the fact that margarine in general is easier to store and seen more 'necessary' than cereals.

To satisfy their customers, retailers may aim for individual availability levels. Depending on consumer reactions, replenishment may be operated in a way that suits the retailer's target group and expectations. But even within the same retail company, categories might be managed in different ways to match shoppers' particular reactions to OOS in certain product categories. The management of replenishment activities can therefore be assumed to be linked to customer OOS behaviour. Understanding OOS reactions is therefore

fundamental to understand replenishment operations. Where the replenishment fails and OOS are caused, is outlined in the next sections.

#### **2.1.4.4 Causes of OOS**

Knowing about the consequences of stockouts and the resulting financial loss for retailers and manufacturers generates the question how these OOS occur.

Several studies have dealt with analysing the root causes for OOS. ECR Europe (2003) presented some industry cases in which the ordering behaviour and delivery of wrong quantities seem to be the major impact factors. However, that does not explain where the OOS was effectively caused. These case studies also consider the manufacturer responsible for stockouts in 15% of events, which means that 85% of all OOS are caused within the retailer's area of responsibility.

Angerer (2004) summarised a study from the Coca-Cola Research Council stating (1996) that 72% of OOS are caused within the store and only 28% further up the supply chain. The factors within the store are store forecasting (13%), store ordering (34%) and store shelving, which alone causes a quarter of all stockouts. These causes were also seen in a study by Fernie and Grant (2008) in which the reasons for the underperformance of a grocery chain are investigated from within the retailer. However, the combination and importance of factors is highly individual.

Looking at the various steps of the retail supply chain ECR Europe (2003) combined data from seven retailers and store audits across these companies to follow product availability along the supply chain. A strong decline of availability was noticed from the retailer's distribution centre where availability is on average 99% down to 96% at the shops' backstore and finally to 93% on the shelf.

However, the availability depends strongly on product categories. Availability reports (McKinnon et al., 2007; Institute of Grocery Distribution, 2006, 2007)

reveal extreme differences between categories. This is influenced by the product characteristics and the according requirements. McKinnon et al. (2007) focused their study on the health and beauty category, as this was unexpectedly the worst performing category.

They identified twelve main root causes by interviewing store managers:-

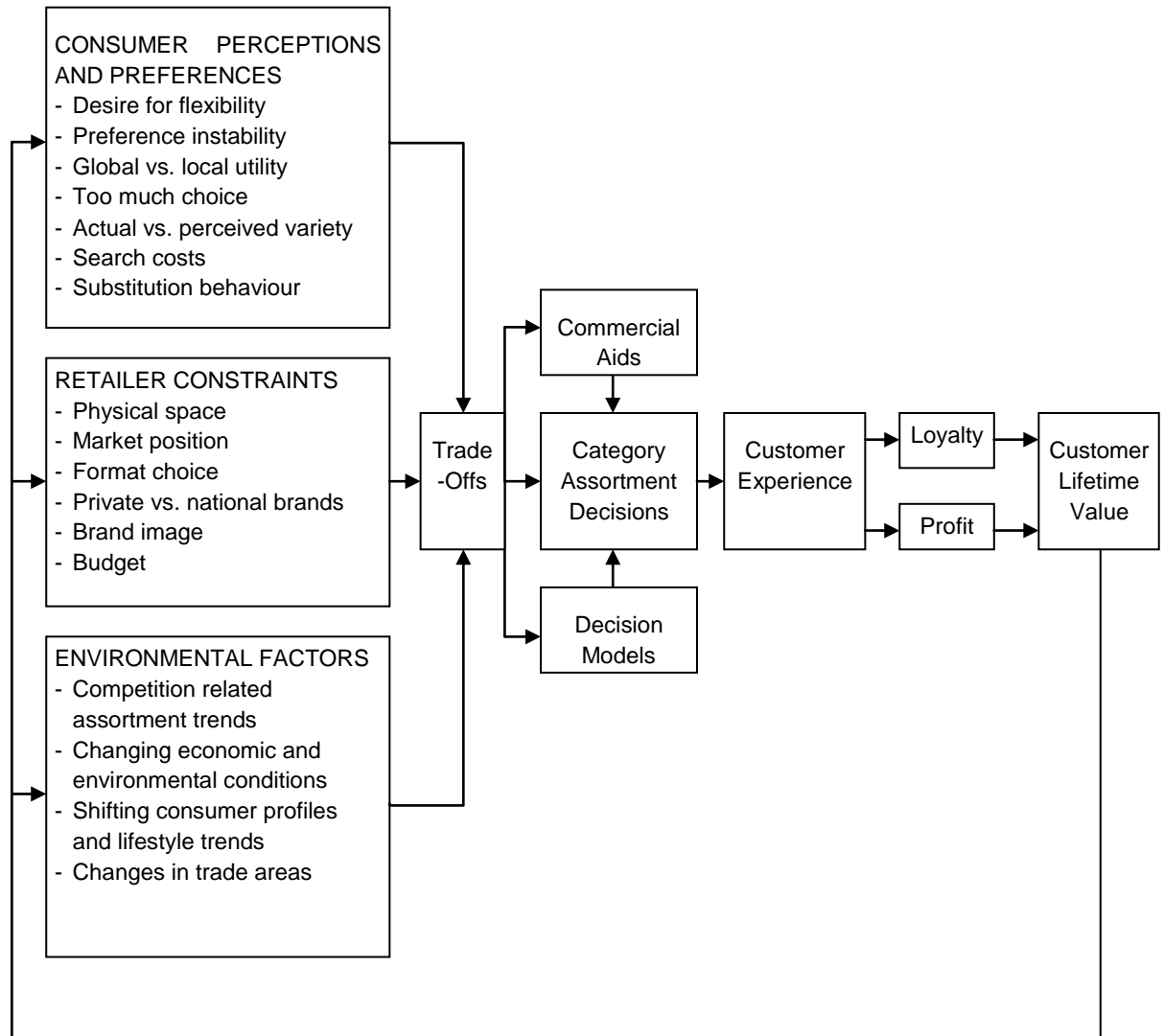
- Promotional activity
- Rate of sales
- Inaccurate inventory records
- Inbound logistics
- Shrinkage
- Organisation of the backroom
- Range density
- Staff motivation
- Merchandising and shelf-filling
- Design and use of planogrammes
- Level of new product introduction
- Nature of the packaging

The interviewed store managers related much of the OOS problem to factors outside their own control. One may assume that it is in their own interest to shift the responsibility for poor OSA towards other actors in the supply chain such as the retailer's headquarters or the depot, and hence biased answering may be assumed. Nevertheless, their perspective on the problem is one perception of OOS causes along the supply chain.

Within one retail organisation there might be opposite targets between functions, stores and headquarters. Another example from McKinnon et al.'s (2007) root causes is the range density of a retail store. The shop's shelf is not only the point of purchase decision making for the consumer, but furthermore – from a retail logistics' perspective– it is storage space within the store. Retailers therefore try utilising the storage space as much as they can whilst also presenting a tidy display to their shoppers (Hulbert, 2009). However, retailers

cannot base the decision of shelf-space allocation only on the proportionate sales of a product. When considering the product assortment within a product category, the retailer is facing several trade-offs as shown in Figure 7.

**Figure 7 Product Assortment Planning Model**



Source: Mantrala et al. (2009: p. 72)

Consumers require choice and variety in their shopping regardless they may be loyal to one product. Also local differences in consumer preferences make it necessary to use an individualised approach for different regions. When selecting the product range the retailer has to consider providing an appropriate

variety without overwhelming and increasing the shopper's effort to find and chose a product (Mantrala et al., 2009).

Despite retailers trying to adapt a strategy that suits its customers, there are also constraints from within the retailer that prevent a proportionate allocation of shelf space. Those are the physically available shelf and store space; the strategic positioning of the retailer within the market; and the width of private labels within the category. As the available shelf display influences the rate of sales of a product, marketing and sales decisions along with suppliers' interference manipulate the shelf space allocation. Even if the retailer established an optimal allocation of shelf space, this decision would only be valid at the point of time it is made; as the retail market, economic conditions and consumer preferences are characterised by constant change. Therefore a perfect allocation of shelf space needs a constant review of categories and space allocation involving all partial interests (Mantrala et al., 2009).

Consequently retailers' decision making is not only based on product availability. And even though high on-shelf availability is a major task for a retailer, it might stand in contrast to other tasks within the organisation, such as shelf space agreement with suppliers.

Looking deeper into the store operations side of stockouts; Gruen and Corsten (2008) divide the in-store causes of OOS into store-based OOS and shelf-based OOS. They identified data and forecasting inaccuracy, as well as replenishment activities as store-based causes. Shelf-capacity, shelf-implementation and shelf-management execution are considered as shelf-based causes. Since both store-based OOS and shelf-based OOS have different root causes there is a need for different solutions to improve OSA. The root causes for stockouts stated by Gruen and Corsten (2008) are similar to those by McKinnon et al. (2007) but arranged differently in categories.

Although all studies into the root causes for OOS rely more or less on data from smaller numbers of retailers, the similar results agree that OOS is largely caused within the store environment. Also, most studies use independent store

visit data for the root cause investigation of OOS, which translates into a high relevance, as the auditors perceive the situation in the same way as customers and employees do. Additionally, the threat of inaccurate data is excluded.

Having identified the store itself as an important –but not sole– factor towards OSA, one needs to look at the retail supply chain processes at this point. Thus, the next sections look at logistics processes within stores.

#### **2.1.4.5 Areas for OSA Improvement in the Store**

Additionally, store handling costs during the last 50 metres of the retail supply chain represent 50% of total retail operation costs (Broekmeulen et al., 2004). Better management of in-store operations will therefore have a double impact on a retailer's performance, as it affects both the input side (costs) and the output side (OSA).

Improving in-store processes can lead to a significant cost advantage as shown in a study by McKinsey and the University of Cologne (Thonemann et al., 2005). While the average grocery retailer's store workforce spends 43% of their time on in-store replenishment, the best practice retailers spend only 22% of in-store time on that activity. At the same time the best practice retailers show a 61% lower OOS rate.

Despite the impact of in-store logistics processes very little work has been done so far in this area. Kotzab and Teller (2005) mapped the flow of goods through the store and provided a general model for dairy products in an Austrian supermarket chain. The model considers the physical transportation and flow of information but goes more into the details of transport than information. They also noted the point of trained personnel towards in-store performance.

In contrast to the warehouse there is actually very little technical equipment to support picking and replenishment inside the store. This increases the reliance onto employees in store operations. Comparing the performance of in-store logistics is difficult, because requirements and characteristics differ between



stores in the study; additionally the in-store performance relies on the previous stages in the logistics system and are outside the store's influence (Kotzab et al., 2007).

Other authors (Beck and Peacock, 2007; Baxter, 2007; Kotzab, 2004) support the need for skilled store staff. They also state that strengthening store staff is a major factor to improve store operations. The improvement itself will not be achieved by fancy and expensive technology, but rather by developing easily executable solutions. Successful applications usually reduce non-value-adding activities and avoid wastage. Retailers started using lean management principles previously only known in manufacturing environments. This lean retailing is supposed to be customer oriented and wants to concentrate on activities the customer is willing to pay for. Typical sources for waste are too much inventory, queuing times, activities caused by OOS, product quality issues, double checking and extra handling (Magnus, 2007; Thonemann et al., 2005). 'Lean retailing' may be considered as new wording, rather than being a new concept. It tries to apply lean manufacturing principles in retailing. However, in this attempt it ignores the direct customer contact and the service character of retailing.

Fisher et al. (2000) promised the advent of 'rocket science retailing', calling for highly sophisticated information technology (IT) systems to improve OSA and retail operations in general. However, after a closer look at their suggestions it becomes clear that their ideas of 'rocket science retailing' actually mean the same what other authors call straightforward solutions avoiding fancy frills.

Fisher et al. (2000) focus on data accuracy to run advanced IT, but the way data accuracy is achieved occurs to be very conservative by concentrating on store processes and employees. Raman et al. (2001) pointed out that inventory data accuracy is essential to improve store operations. They found huge inter-store differences for the accuracy of inventory data. They blame data inaccuracy for screwing IT systems and replenishment processes. Thus, the very first step to improve store execution should be to achieve a high level of data accuracy.

### **2.1.5 Store Execution**

Some North American literature provides a different starting point for thinking regarding in-store management. Ton (2002) considered studies in the manufacturing industry, which showed performance variances between factories between several nations and within the US on its own. These studies concluded that different management and execution influenced the factories' success and is an important and often underrated factor. The results of these studies are then transferred to an investigation of execution in the retail sector.

Ton (2002) looked at 'phantom OOS' within a single book and media retailer in the United States. The term phantom OOS means that, according to the IT system, a product is supposed to be in the store but cannot be found for various reasons. The study used regression analysis to compare performance data from the stores. The variation found of products in-store but not on the shop floor was huge. It ranged between 0.24% in the best performing store to 10% in the worst.

All the stores belonged to the same chain and were served by the same distribution centre (DC), had the same assortment, were offered the same incentives, and used the same IT system. The reason for the variance is therefore assumed to be within the individual stores. The study tested several hypotheses and showed that there is a positive relation of the percentage of 'products in store but not on floor' with inventory depth, SKU density and store manager turnover. There was a negative association with labour intensity and training. Surprisingly it was only positively associated with part-time employee turnover and not with full-time employee turnover. The study surmised that this was caused by special circumstances at this retailer, where part-time employees show a higher satisfaction with their workplace than full-time staff.

Another study looking at inter-store performance variances was done by Hise et al. (1983). It also came from a manufacturing way of thinking. All 132 stores in the study belonged to the same non-clothing retailer, carried the same assortment and were located in shopping malls. Hise et al. (1983) used

regression analysis to compare the three performance measures of sales volume, contribution to income and return on assets with independent variables of store manager, store, competition and location. The store manager variables looked at more social factors like marital status and the number of children. Store, competition and location looked at variables such as inventory levels, store size, competitors within the mall, and mall size. The study revealed that high levels of inventory, the number of employees, the store manager's marital status; and his/her education and years of experience with the retailer all have an impact for the store's return on assets. Surprisingly it also showed that the length of a manager being with a store had a negative impact towards performance. Hise et al. (1983) assumed this to be caused by the retailer's staff promotion system. Well-performing store managers were promoted to larger stores while weaker managers remained at their original store. The study was limited towards one retailer and one single type of shop format. Hence the study called for more investigation of store execution and store management in other settings and retailers.

Salmon (1989) stated the importance of execution in retailing. He announces key factors for future retailing based on examples from best-practice retail companies. The most crucial factors for success were seen to be directly influenced by store employees. The paper pointed out that store employees should be given more control and their knowledge should be used more. However, their skills have to be developed to cope with required operations. Achieving success in retailing will rely on satisfaction and loyalty of employees.

The topic of retail execution attracted the Coca-Cola Retailing Research Council, which conducted a study about store management effectiveness in relation to store and store manager variables (Human Synergistics Inc, 1986). They conducted a survey of 218 store managers across 15 different companies. The stores showed very different general characteristics of store sizes between 9,000 and 200,000 ft<sup>2</sup> and weekly sales from USD 65,000 to 1.5 million. In some randomly selected stores they also sent questionnaires to department managers and non-rank employees to investigate the leadership and

management styles within the store. The top one-third effective stores were then contacted with a further questionnaire to investigate the difference between high and low performers.

As the study was investigating several retailers, they used the subordinated employees rating of their store managers for measuring 'good' management, asking about task, people and leadership skills. The conductors of the study were concerned that employees could rate managers higher due to popularity or for a low workload. Therefore they controlled the employees' ratings with headquarter ratings of the store managers. As a first finding they saw that both identified the same managers as being 'good'.

Summarising the results the most effective store managers were excellent people managers. They were developing, motivating and utilising their employees. Furthermore they led by example and their staff appreciated their managers' own effort for the store. The most effective store managers behaved like entrepreneurs and brought innovations into the store. Their skills were equally spread and they could be called generalists. In contrast to that the less effective store managers did not let their employees participate as much in decision making but rather controlled them and avoided any risks including new ideas.

The Coca-Cola Retailing Research Council study (Human Synergistics Inc, 1986) also revealed that the most effective store managers were good in handling human resources in-store. However, the validity might be reduced by the fact that effectiveness in this study was partly measured by evaluation through these human resources. It also does not show how much of this success can be claimed for the store manager him-/herself and how much is caused by headquarter decisions.

In 2006 the now called Coca-Cola Retailing Research Group conducted another study on the issue of store performance (FranklinCovey, 2006). The study included 115 stores from more than one company, the exact number is unfortunately not provided. Performance was measured as financial

performance compared to market potential. The high performers showed higher customer loyalty as well as higher employee loyalty and engagement.

However, the study did not describe the way the research was conducted. It is therefore unclear to which extent the variables influence each other and in which way they work. Customer loyalty may increase profits, but this may not only be caused by good store management. It could also be a result of location or headquarter policies. Even though the study lacks showing significant methodological support it can be seen as an indicator that good store management leads to higher customer and employee loyalty and eventually results in better financial performance.

In a recent study Aastrup and Kotzab (2009) explored the in-store root causes of OOS in Danish independent retailing. OOS were identified through auditors' store visits and each OOS was analysed on an individual case by case basis to reveal the root cause. Unfortunately, the study did not define the participating independent retailers. It is therefore unclear how the results can be generalised towards other retailers. Nevertheless, the study confirmed that OOS is largely caused within the store and that store management has a considerable impact towards OOS. It showed an average OOS rate of 6.2%; 1.5 percentage points were explained by store replenishment, 4.6 percentage points by store ordering, and only 0.1 percentage points by the centralised functions or suppliers.

Aastrup and Kotzab (2009) saw their results in contrast to chain operated stores, where the major share for in-store OOS causes is held by replenishment issues and only a quarter of OOS are caused by store ordering. It may be assumed that the explanation for this lies within the inherited reasons of independent retailing, such as generally smaller stores, focus on rural areas, less frequent delivery cycles etc. This would then agree with the higher OOS rates for convenience retailing in the UK (IGD 2007). However, the study does not supply that sort analysis of the underlying sector specifications.

Further, Aastrup and Kotzab (2009) qualitatively investigated the independent stores. It appears that most store ordering relies on the employees. At the same time most stores complained about a difficult labour market and problems to

attract and keep qualified employees. The best performing store actually expressed a low labour turnover, whilst the worst performers showed a high turnover of employees. Store ordering systems did not necessarily perform better than employees when it came to ordering. Nevertheless, they would have the potential to compensate for a lack of qualified staff at the store.

OSA performance also depended on the availability of shopping alternatives. Town stores with plenty of competitors around paid more attention towards the product availability and the underlying customers' satisfaction as a competitive advantage. Generally, well managed independent stores show the advantages of localised or decentralised decision making; such as the free allocation of resources to what works best and a direct understanding of the present situation. However, that can only be to their advantage if store management is aware of issues, as there is no central management that educates the store management in operational issues. The better performing independent stores allocate more management attention towards OSA, have fixed responsibilities of employees to ordering and replenishment, plan ahead for replenishment peaks and are characterised by lower labour turnover rates.

By looking at the in-store logistics and store execution processes, one can extract the two main factors those processes rely on are the store employees and the way that the store and the employees are managed. The management of store processes was presented in the previous paragraphs. To execute their tasks, retail employees apply some form of technological system. The principles of socio-technical systems are therefore presented in the following section. Subsequently, retailing as a workplace is portrayed to understand the factors in this environment that may influence the way in which this part of the supply chain is managed. Eventually, conclusions are drawn about an existing gap in OSA research, leading into the next chapter, which deals with the research question.

### **2.1.6 Socio-Technical Systems**

Although this study considers the interaction between humans and systems at store level in a postmodern way as being mostly an interaction with management systems (Jackson, 2003), retailers may also use technological devices to run their store operations. Humans interact with these technical systems and the related devices, which are for example handheld barcode scanners or planogrammes. To understand store operations it is thus necessary to understand the principles of these socio-technical systems.

Herbst (1974) described socio-technical designs. Starting from a self-employed craftsman, they were categorised as the process of increasing mechanisation of the workplace during the last centuries, using levels of control as a measure for the different stages. At the beginning, the workplace was controlled by foremen. Then increasing specialisation led into organisational control through production systems, and at a third stage the rising need for efficient utilisation of expensive production machines and workers resulted in machine operators being controlled by production machines. Eventually, modern highly automated machines only require human involvement to support the production process or for maintenance.

Trist et al. (1963) focused on changing processes in the coal mining industry. In their study new working processes were introduced to increase efficiency. This does not only affect operations within the mine, but also the organisational and social interaction of employees, which again interrelates with the mine's performance. In the study by Trist et al. (1963) the system eventually collapsed, because of discontent workers fulfilling processes ineffectively. Hence, the installation of systems and underlying processes should not only be looked at from a production point of view but also from a social perspective.

Trist et al. (1963) and Herbst (1974) focussed on socio-technical systems in a production environment. Nevertheless, the retail industry is also using highly sophisticated technical and managerial systems today to improve their replenishment processes. With the emergence of even more complex

technology –such as radio frequency identification (RFID)– retail supply chains and processes will change all along the supply chain including the store itself. Decision making may thereby shift away from the shop floor. However, the correct usage of the new systems at the shop level will be crucial for effectiveness (Butcher, 2007a).

As growing supply networks are becoming more complex this raises the need for higher skilled and knowledgeable workers to keep them running effectively. Therefore supply chains will need a social and an environmental component as well as the technical side (Butcher, 2007b). Further, retail companies will have to consider these social and environmental components within the technological side of their replenishment systems to keep them running successfully.

### **2.1.7 The Retail Workplace**

Stating that the OSA performance strongly depends on the in-store operations and in particular the employees on the site, leads to the necessity of having a closer look at the retail work environment.

According to the British Retail Consortium (2009) the retail sector employs almost 3 million people, representing 11% of the United Kingdom's entire workforce. However, more than half of them are part-time employees, particularly female workers (Burt and Sparks, 2003a).

Labour is the second largest cost factor in retail after the merchandise costs. It is therefore not surprising that an efficient utilisation of the workforce is essential for the economic success of retail companies. With the advent of stock exchange listed retail companies, the pressure on the performance increased. Retail companies centralised their operations and stores became individual cost centres with execution policies mostly predetermined by head offices. Technological developments in telecommunication helped to monitor individual store and employee performance (Freathy and Sparks, 1995; Braverman, 1974). Consequently, this could have resulted in more control of



stores and individuals through the headquarters and a loss of independence in decision making on the store level.

The centralisation process also led to the development of a more professional and highly specialised workforce at the centralised operations of retail companies (Freathy and Sparks, 1995). However, a polarisation happened in the retail labour environment. More skills are only required higher up the hierarchy for managerial and specialist positions, whilst the majority of retail workplaces faced a strong deskilling tendency (Penn, 1995). The deskilling trend particularly hit general assistants and routine operations within the store, which are usually mostly part-time employed and hence employers are even less keen on investing in their training and education compared to full-time staff (Sparks, 1995; Chartered Institute of Personnel and Development, 2008).

Part-time workers can be majorly found in POS and CSA positions. As those jobs are characterised by low required skills and easy substitutability, retailers increased the number of part-time employees to increase flexibility. Whilst full-time employees are recruited to cover the base of store operations, part-timers are employed flexibly to cope with the flow of consumers. Generally, with the increase of store size the proportion of part-time employees increases as well (Sparks, 1995). However, the ratio of full-time and part-time workers depends on the store operator. It can be assumed that this is caused by retailers' policies. An example for that is the UK's fourth largest grocery retailer WM Morrison, which follows a skilling strategy to differentiate itself against competitors. However, WM Morrison's strategy only focuses on skilling customer consulting positions in the stores like butchers and in-store bakeries and do exclude store logistics functions (Dawson et al., 1995; Smedley, 2009).

Even though part-time employment is most widespread in the UK; Germany and France show exactly the same trends in their retail labour environments (Shaw and Dawson, 1996). With the UK being the most developed and deregulated retail market, the other countries can be expected to follow towards the same levels of part-time employment and skills polarisation in future. However, German employees enjoy a higher level of training and qualification due to a

genuine apprenticeship system. All three countries share the fact that the majority of part-time workers are female, which is mostly caused by a traditional understanding of female responsibility for domestic commitments, particularly the responsibility for childcare (Baret et al., 1999; Robinson, 1995).

According to the Chartered Institute of Personnel and Development (2008) the retail industry is also characterised by a very high labour turnover rate. Whilst the overall labour turnover for the British labour market was 17% for 2008, the retail sector's labour turnover was above 30% (*labour turnover = number of leavers in a set period / average number employed in the same period x 100*). Most cited reasons for leaving companies was career change, low level of pay, and lack of career development opportunities. Further 27% mentioned childcare commitments as their reason to leave. These results match the job environment for many part-time retail workers. Despite most retail companies acknowledging the high turnover rates and their negative effect towards performance, the labour turnover rate for the retail industry remains constantly high over the years.

A highly committed workforce can achieve several performance advantages for the retailer. Generally, committed employees are organised in a decentralised and flexible way. Their effectiveness and utilisation is usually superior to compliance based forms of work organisations, which however show better results for cost minimisation. Commitment can be seen as a good predictor for quitting a job. Less committed workforces will therefore tend to show a high labour turnover rate (Guest, 1992; Meyer and Allen, 1997). A retailer therefore has to decide whether its store operations shall be centrally organised and focus on efficient replenishment or whether the store operations shall focus on having a highly committed workforce, which might be more helpful to customers. Thus the organisation of store replenishment operations will depend on the retail format and category, and whether customers need advice and help during their shop (Placzek, 2007).

Employees on a lower step of the hierarchical ladder see their loyalty very different to those in leading positions. Foster et al. (2008) categorise retail

employee loyalty into loyalty to the retail industry, to the retailer and to the store. Overall loyalty to the retail industry is low around twenty percent. It occurs that the major factor to remain within the industry is age, which is probably caused by convenience and the difficulty to find a job in a new industry at a high age. The loyalty to the retailer is higher for full-time employees.

Full-time employees are usually in managerial positions. Their career progress expects them to move stores from time to time and they communicate frequently with the retailer's head office. Additionally, their position includes benefits tying them to the company, for example pension schemes and share ownership. These are not available to part-time and shop floor jobs, which might explain their reduced loyalty to the retail company. Their loyalty depends much more on the store they work at. In particular female staff with family commitments actually chose to work at a certain place rather than for a certain retailer. Their workplace choice therefore mostly depends on the convenience of the store regarding location and work schedules. Foster et al. (2008) argue that retailers' human resources policies should do more to increase loyalty and commitment of low paid employees through more autonomy and flexibility for line managers to gain positive effects on operations.

However, skilling employees might not be the straightforward answer to a high labour turnover. Even though many publications suggest that hypothesis, Booth and Hamer (2007) found during a case study at one British retailer, that a skilling process led to higher turnover rates than before. They conclude that this effect results from the increased self-worthiness feeling of the employees. After their improved qualification workers felt eligible to apply for jobs outside the organisation which were being perceived as better. Unfortunately, Booth and Hamer's (2007) study does not consider the hierarchical position of workers or the career development opportunities for them at the company.

Fisher (2004) suggested treating retail operations in the same way as factories. It can be argued however, that in manufacturing there is no direct contact between worker and customer. Many forms of retailing rely on the interaction between sales person and consumer where the seller is in a position of

consulting. Also the required skills are very different between manufacturing, where often high manual skills are needed, and the function of general shelf filling jobs in retailing.

Overall, decisions whether to skill in-store staff depend on the strategic positioning of a retailer and the customers' need and expectations towards store staff. Logistics functions might be seen as not helping the customer directly and their operations will therefore be organised in the most efficient way; whilst customer facing staff may require specialist knowledge to advise consumers and generate value to them.

### **2.1.8 Conclusion**

Logistics and marketing interact (Grant, 2007; Stock, 1997). Therefore, logistics decisions cannot be made isolated only from a cost point of view. It also has to understand the impact towards other players of the supply chain and take overall effects into consideration. The interface with marketing is the 'place' part of the marketing mix, where logistics decisions will influence a company's sales performance. Reciprocally, marketing decisions have to consider the effects on logistics' costs. Thus, the provided customer service level will be a trade-off between sales and costs.

Logistics affect the costs and the sales side of the retail business. And with the concentration in the retail sector logistics it became an important competitive advantage. Furthermore, with the advent of modern IT, large scale companies were enabled to run logistics processes in an efficient and effective way.

Even though retail logistics improved during the past, retailers still often do not fulfil one of their major tasks: making products available when the customer wants to have it. The effect of such an OOS depends on the consumer's response. In the short-term it can be a lost profit due to substitution with lower value products or the refusing of purchase. The short-term reaction depends on product, purpose and consumer characteristics. In a longer perspective the

consumer's perception of the retailer declines and the shopper might even become loyal to a competitor.

The causes for stockouts are versatile and can be found all along the supply chain. However, research showed that two-thirds of OOS situations are caused at the last 50 metres within the store. Thus, improvement should focus on the store operations level. Store operations strongly rely on the employees on the shop floor and the way stores are managed. So far little academic research has been undertaken in the area of store execution in relation to OSA. Case studies about store management looked only at single retail chains or did not look at availability but rather at general management issues.

## **2.2 Research Question**

There is a wide range of literature concerning consumer behaviour in OOS situations (van Woensel et al., 2007; Campo et al., 2000; Emmelhainz et al., 1991). However, there is less investigation of the retailer's internal side at the POS. Literature and research on in-store replenishment management systems in connection with on-shelf availability is sparse. The objective of the research project is therefore to investigate the last 50 metres of the retail supply chain from the backstore to the shelf from the retailer's perspective.

From publications about retail store execution we know that a huge part of store performance depends on the people working within in the store (Fisher et al., 2000; Baxter, 2007; Emberson et al., 2006). However, literature frequently mentions data accuracy in the shop as an important issue to achieve high OSA results (McKinnon et al., 2007; Fisher et al., 2006). Hence, replenishment systems and staff combined affect OSA performance on the last 50 metres, as data for replenishment systems is gathered by the store employees. The research question for this research project is: How do humans and replenishment systems interact in the last 50 metres of the retail supply chain.

In order to answer this research question, several underlying aspects of store replenishment operations need to be explored:-

1. What do store replenishment operations entail and how are they managed?

In-store logistics processes and their management are so far not well-established in academic literature. Thus, they firstly need to be explored and portrayed.

2. How do store employees interact with replenishment systems?

To investigate the design and management of store replenishment processes, it needs to be established how the two factors human and system interact with each other at the store.

3. Which factors shape the design and the management of store replenishment systems?

The investigation how humans and systems interact requires identifying the factors that have an impact on the design and the management of in-store replenishment systems.

4. What level of decision making power do store employees have in the management of replenishment operations? In which way can they influence the replenishment processes?

As the study looks at stores of retail chains, it is assumed that the store employees' work is influenced by other players within the retail organisation. Hence, the extent of their influence on the store replenishment operations has to be investigated.

This study focuses on replenishment and the internal side of retailing and will hence concentrate on staff working in the retail organisation rather than looking at consumers.

### **3. RESEARCH APPROACH**

The focus of the study concerns in-store retail replenishment systems and employees. It investigates in-store replenishment management on a retail store level in both the UK and the German-speaking countries of Germany and Austria.

Conducting research needs to be clear about philosophical underpinnings. This chapter will firstly show the fundamental differences of philosophical standpoints and the various main positions a researcher can take to look at the research topic and how that influences the way of doing research. In a second step it will present the stand for this research project and select appropriate methodology and method to address the research question. Whilst the beginning of the chapter provides a general overview about the philosophical concepts of science, the detailed stand and origin of the research project is presented in the second half of the chapter.

#### **3.1 Philosophical Issues in Logistics Research**

The research project is going to use a contemporary qualitative approach that can be considered as new to the field of logistics. Thus, the main concepts of research methodology and the philosophical base are explained in a general way to provide a theoretical base for the methodology selection. The application of the philosophical stand in the analysis process is shown later in this chapter in 3.4.

##### **3.1.1 Epistemology**

Epistemology deals with the nature of knowledge and how knowledge can be gained. The two most extreme positions in the field of epistemology are those of the positivist and the interpretivist (Collis and Hussey, 2003).

The positivist sees him/herself as independent from what is researched. A pure positivist takes the attitude of a natural scientist and will only accept externally observable and measurable sources for the research, such as numerical data from machines, statistics or experiments. In contrast to the interpretivist, the positivist ignores feelings or any other interactions between researcher and what is being researched (Saunders et al., 2007; Collis and Hussey, 2003).

For interpretivism it is essential to take social interactions into account. When researching among humans, relying only on numerical and objective data is not enough for an interpretivist. They assume that every human has a social role and plays that role. An interpretivist therefore sees the necessity to take this social role into consideration when looking at the world and knowledge cannot be gained without interpreting answers whilst keeping social roles in mind (Saunders et al., 2007).

Positivism and interpretivism are opposite positions in epistemology. However, some research philosophers consider epistemology as a continuum. Hence, researchers can take positions between the extremes (Kuhn, 1996).

### **3.1.2 Ontology**

Ontology looks at the nature of reality. Subjectivism means that an organisation is a social construct and is therefore permanently revised by its inhabitants. In contrast to this, objectivism assumes that participants have to follow an externally given reality (Bryman and Bell, 2007). Usually subjectivism comes with the epistemological view of interpretivism. It regards reality as a social construct. Consequently, research participants' opinions have to be interpreted considering their social environment to fully understand what they really mean and to discover real knowledge (Saunders et al., 2007).



### 3.1.3 Axiology

Axiology is about values in research and their judgemental influence. A researcher can believe that his/her own values affect the research activity. Logically, the research results have to consider these own values and might have to be interpreted before the real results can be seen. This view is typical for an interpretivist. Alternatively, a researcher may think that research is free of the researcher's biases and that the research and the objects are not affected. This view is commonly held by positivists. To make sure that the research is not affected by any potential bias, the researcher will choose to select several sources to look at the object and choose methods which do not allow the influence of biases (Saunders et al., 2007).

These three points –epistemology, ontology, axiology– feed into an overall concept of the world, which is called a paradigm. The different paradigms and their main features are presented in the following paragraph.

## 3.2 Paradigms

A positivist usually has an objective position in ontology and takes an unbiased stand in axiology. This overall Weltanschauung ('worldview') makes a paradigm. As Kuhn (1996: p. 175) puts it, a paradigm is *"an entire constellation of beliefs, values and techniques, and so on, shared by the members of a given community"*. According to him, paradigms change when an old Weltanschauung cannot explain anomalies and research results. Once the old paradigm cannot fully explain research problems, it is moving into a crisis. A new paradigm will then develop and –depending on its attractiveness– more or less researchers will follow it. This new paradigm will help looking at new problems and looking at old problems from a different perspective.

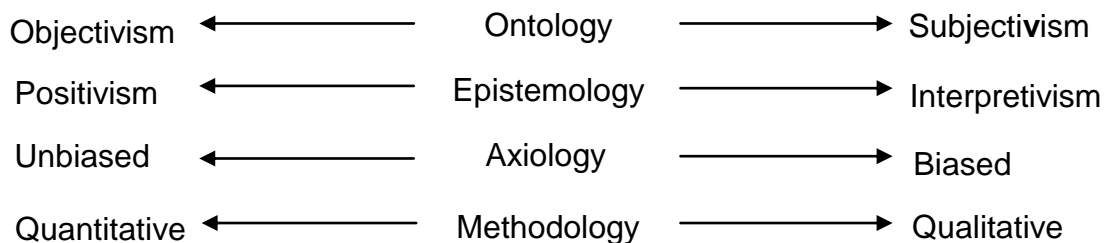
*"Led by a new paradigm, scientists adopt new instruments and look in new places. Even more important, during revolutions scientists see new and different things when looking with familiar instruments in places they have looked*

*before"* (Kuhn, 1996: p. 111). However, a shift in paradigms does not have to be followed by the entire research community. Researchers will remain in old paradigms or paradigms which match their personal Weltanschauung best. There is not really a right or wrong of paradigms, but the researcher has to be aware of his or her own paradigm, because it will influence the research project fundamentally.

In current research philosophy there are two extreme positions of the quantitative and the qualitative approach as shown in Figure 8. However, there are many other positions between those two extremes. The area between the two approaches is understood to be a continuum and hence several research paradigms exist (Burrell and Morgan, 1979).

A positivist would naturally tend to be an objectivist, excluding biases and therefore using a quantitative research approach. In contrast, an interpretivist would tend to be a subjectivist, accepting biases in the research and choosing to be in the qualitative paradigm (Burrell and Morgan, 1979).

**Figure 8 The Objective-Subjective Dimension**



Source: Adapted from Burrell and Morgan (1979: p. 3)

Nevertheless, ontology, epistemology and axiology are continuums. A researcher can take a position between the extremes (Kuhn, 1996). Since this thesis aims to investigate how humans interact with systems at their workplace, it looks at retail employees within a reality that is socially constructed through

the mutual interaction between the involved players. The ontological position of the thesis is therefore in subjectivism.

To understand the informants' reality, their responses have to be interpreted. The research accepts that informants have a certain role in their socially constructed reality. This also needs to be considered when the informants interact with the researcher. Consequently, the thesis' ontological position is further towards interpretivism within the paradigm continuum.

According to the position in the subjective dimension, the researcher accepts the axiological position that the researcher's views have a potential influence on the research. Although trying to keep such biases out of the research as much as possible, one has to be aware that a full exclusion may not be achievable. This issue will be discussed further in 3.3 about research quality.

The philosophical position of the thesis determines the further conduction of the research. The way the philosophical stance is transferred into application in this thesis is explained later in this chapter.

### **3.2.1 Inductive versus Deductive**

Research can be conducted in essentially two ways: deductively or inductively. Neither of them is 'better' than the other; however the deductive approach is usually associated with positivism and the inductive approach with interpretivism (Saunders et al., 2007).

Deduction means testing a hypothesis. The hypothesis to be tested can be developed from literature and previous research. The researcher then has to construct measurable and quantifiable variables that allow testing of the hypothesis. Deductive research is moving from the general broad picture of the research area to the particular research question. A common method for deductive research is for example the use of questionnaires (Saunders et al., 2007; Collis and Hussey, 2003).

Induction in contrast seeks to build theory. The researcher tries to understand the research environment and objects and to extract theories from it. Induction starts at an individual observation and moves towards stating a general theory. This results in the capturing of many biased views from research participants and it might therefore be difficult to generalise research results. However, inductive research does not necessarily want to achieve generalisable knowledge. Quite often researchers are aware that their results are only valid within a limited setting. Inductive research is mostly used when there is none or little previous knowledge about a topic and a hypothesis cannot be formed (Easterby-Smith et al., 2002).

The two approaches are not mutually exclusive, it is possible to combine the two approaches and research can be enriched by doing so. Research can also combine several paradigms in one project (Grant et al., 2010; Mangan et al., 2004; Näslund, 2002; Guba and Lincoln, 1994) and hence deductive and inductive approaches are combined. Mangan et al. (2004) recommend the combination of the approaches in one research project and provide an example in the logistics and supply chain management discipline of using inductive interviews and then deductively testing the gained insights in a study. Grant et al. (2010) provide two examples of combining quantitative and qualitative research methods. They conclude that a mixed methods approach can enable a richer and deeper investigation of a research problem.

### **3.2.2 Research Paradigms in Logistics**

According to Mentzer and Kahn's (1995) analysis of articles in the *Journal of Business Logistics* between 1978 and 1993, the discipline of logistics is vastly dominated by quantitative and positivist research. However, they also note a dominance of US American research, which generally seems to prefer quantitative approaches. The dominance of quantitative research could have also arisen from the very nature of logistics being an applied science with a strong engineering heritage.

Vafidis (2007) focuses on Swedish and Finnish doctoral dissertations to look at knowledge approach patterns in logistics research. His work shows that the methodologies of most doctoral theses are driven by practical considerations and philosophical issues are often ignored. Vafidis (2007) also identifies that the majority of doctoral theses in the two Nordic countries tend to take a paradigm between the extremes of pure positivism or interpretivism. Nevertheless, there is still a huge part of research done at the extreme positions. Furthermore, he is concerned whether the preference for a certain paradigm might be caused by the preferences of academic journals and that some approaches might be 'easier' to get published, which is essential for the career development of his research participants.

Näslund (2002) complains about a dominance of positivist research in logistics and sees research traditions in the US as the major cause for it. The use and acceptance of quantitative research in academic journals leads to a self-fulfilling loop. He states that qualitative research can add valuable insights to logistics research and that the concentration on quantitative approaches limits the development of the discipline. However, he does not condemn the positivist paradigm, but calls for the addition of qualitative elements such as case studies and action research to enrich logistics research. Qualitative research cannot be evaluated by the same measures as quantitative research. Hence, there is a need for the development of quality measures for qualitative research and the awareness that quantitative measures do not necessarily suit them.

Mangan et al. (2004) notice a dominance of quantitative research in logistics. Like Näslund (2002) they call for more qualitative elements in logistics research. They promote methodological triangulation and provide an example of combined inductive and deductive methods within one piece of research. It can be questioned though whether the researcher really shifts between paradigms by using inductive and deductive methods, or rather stays within one single paradigm using various methods.

Starting from Mentzer and Kahn's (1995) work, Sachan and Datta (2005) analyse 442 articles from three leading logistics journals published between

1999 and 2003. They show that the majority of publications still use quantitative methods. However, they noticed a shift towards more qualitative publications and increased acceptance of qualitative approaches. They conclude that this might be caused by the ongoing maturity of the discipline, which leads to more 'why' and 'how' questions. Consequently, the discipline is moving towards a more holistic supply chain thinking rather than looking at functional parts. A positivist approach may struggle with the supply chain thinking where the whole can be more than the sum of its parts.

Spens and Kovács (2006) analysed the same three leading logistics journals between 1998 and 2002. They categorised the applied approaches into deductive, inductive and abductive (reasoning from effect to cause; neither purely deductive nor inductive). Deduction is the dominant research approach with an increasing inductive share; nevertheless they state that much research is actually using inductive and abductive approaches even though its authors claim to use deduction. They assume that many researchers do not question the predominance of deduction at all and hence automatically think they use deduction. A more explicit questioning of the research approaches in logistics research could therefore add rigour to the discipline.

Arlbjørn et al. (2008) confirm the move towards deduction for the Nordic countries. Their analysis of Nordic logistics research reveals that researchers holding PhD degrees are tending to do more theory development than theory testing. They also see a general domination of qualitative research approaches in Nordic logistics research, which was also identified by Vafidis (2007). This is particularly caused by the frequent usage of case studies, which they categorise as a qualitative research methodology.

There was no study available which explicitly analyses the situation in British logistics research. However, the UK can be assumed to be culturally closer to the preference of quantitative research alike in the US rather than the Nordic preference for qualitative methods.

In summary, these authors agree that the area of logistics research is internationally characterised by predominantly quantitative research. Nevertheless, there is a shift towards more qualitative research. The dominance of quantitative research seems to be majorly caused by US researchers and journals, whilst qualitative research becomes increasingly popular with European logistics research. Also, the dominance of the quantitative approach leads to a continuous restrictive loop, as traditional quantitative researchers are leading the discipline and prefer the use of their favourite approach.

The thesis uses a qualitative approach as it is the best way to address the research question. The study is exploratory and therefore an inductive approach is more suitable as the creation of testable hypotheses from extant literature would prove to be difficult. Further, a qualitative approach provides the opportunity to investigate the phenomenon more deeply and is hence more suitable to understand the underlying aspects in the area. However, in order to increase the acceptability of qualitative research, it needs to be made clear how such an approach differs from the traditional quantitative approach and what its advantages and limitations are. Thus, the issue of research quality is presented in the next paragraphs to show the different measures for such an approach.

### **3.3 Research Quality**

The research paradigm and design influence the way research is conducted and result in different quality measures and ways to ensure credibility. The two major credibility measures are reliability and validity. Generalisability can either be seen as external validity or stand as an own measure. However, these quality measures are criticised to be designed for quantitative research (Näslund, 2002; Halldórsson and Aastrup, 2003). The following section introduces alternative measures for qualitative research as well.

### **3.3.1 Reliability**

Reliability is concerned about the consistency of research. The major question for reliability is: If the same research was conducted by another researcher in its defined environment, would it yield the same result? Reliability can be threatened by observer or participant errors and biases. To avoid participant errors the research has to ask the same questions and ensure that responses use the same definitions. As an example for this research, companies have different definitions and measurements for OSA and the researcher has to make sure that the responses are comparable (Saunders et al., 2007). Regarding participant biases, participating store managers might answer to comply with company policies to stay out of trouble, even though in reality they probably do not follow those company policies. Confidentiality and anonymity have to be ensured and results shall not reveal individual answers. The avoidance of observer bias will be achieved through the selection of appropriate data collection methods. Also the reflection and discussion of the data collection and research methods will contribute to prevent observer bias.

### **3.3.2 Validity**

Whether a variable really measures and reflects what it is supposed to is the concern of validity. Hence, the design of variables and constructs is in the focus of validity. Mentzer and Flint (1997, p. 201) see four main concepts in validity:-

- statistical conclusion validity (Is there a relationship among the constructs?)
- internal validity (Is the relationship plausibly causal?)
- construct validity (Given causal probability, what exactly are the constructs in the relationship?)
- external validity (Given causal probability between these specific constructs, how generalisable is it across persons, settings and times?)



No research can possibly fully satisfy all concepts at the same time. Every research method is stronger in some validity aspects and weaker in others. Surveys for example are strong in statistical conclusion validity, but suffer from internal validity; whilst case studies show a strength in internal validity, but can be considered being weaker in external validity. Therefore, Mentzer and Flint (1997) demand the use of several perspectives and methods on the same logistics topics to ensure the elimination of validity weaknesses.

Looking at humans in their work environment, this research aims for internal validity and relevance to the involved group of participants. The study involves store managers and retailers into the questionnaire design to check face validity. Face validity means that validity is achieved when something is valid for the research participants themselves (Collis and Hussey, 2003).

External validity is concerned whether the results are valid for other environments and settings. This research is going to look at OSA at a store level. The results should be valid for all retail store chains, not only for a certain product group. Every product and every retailer shows individual logistics, demand and OSA characteristics. The selection of participants must therefore ensure that retailers from different backgrounds are included or limit its validity to certain groups of retailers.

### **3.3.3 Alternative Measures for Qualitative Research**

The standard quality criteria of reliability and validity were developed from a positivist point of view and hence do not fit qualitative research (Halldórsson and Aastrup, 2003). Even though researchers such as Ellram (1996) do not see a reason to apply different measures for qualitative research than for quantitative, Halldórsson and Aastrup (2003) argue that there is a gap to bridge between the traditional quality measures and alternative measures of trustworthiness and craftsmanship.

Their concept of trustworthiness consists of the four dimensions credibility, transferability, dependability and confirmability to measure research quality. These measures are compared to the traditional measures as shown in Table 1.

**Table 1 Comparison of Trustworthiness Measures to Traditional Measures**

	Traditional	Alternative
How <b>credibility</b> compares to <b>internal validity</b> .	The degree of isomorphism between a study's findings and the 'real' world, i.e. the degree of correspondence between study findings and the reality investigated.	Matching constructed realities of respondents to those represented by the evaluator.
How <b>transferability</b> compares to <b>external validity</b> .	Both sending and receiving contexts must be random examples from the same population. Burden of proof rests with the inquirer.	No true generalization is possible. Transferability depends on similarities between sending and receiving contexts. Emphasis is on empirical process for checking the degree of similarity between sending and receiving contexts. Burden of proof rests with the receiver.
How <b>dependability</b> compares to <b>reliability</b> .	The quest is for invariance. Alterations in methodology or constructs are threats to reliability.	The quest is for trackable variance. Observed instability is not only related to error but also to reality shifts and better insights. Changes in methodology and construction are expected products.
How <b>confirmability</b> compares to <b>objectivity</b> .	Assurance of objectivity based on method. Objectivity is a quest for neutrality, an inquiry free of bias, values, and/or prejudice.	Assurance of the integrity of the findings is based on the data (interpretations, constructions, assertions, facts, etc.), i.e. data must be trackable to the sources. Objectivity is an illusion-methodology cannot be separated completely from the researcher, who selected and used the method.

Source: Halldórsson and Aastrup (2003)

Trustworthiness is strongly correlated to the craftsmanship of research. From the perspective of craftsmanship the researcher has to check, question and theorise to achieve validity; and check the results from different point of views to

avoid biases and one-sided interpretations. Further, the researcher has to question interpretations and why different meanings might be used, and how the chosen method and the theoretical orientation influence the study (Halldórsson and Aastrup, 2003).

To achieve credibility in this thesis, the researcher needed to ensure in the data collection process that his and the participants' understanding of constructs match. Transferability as the qualitative equivalent to external validity may be attained by providing as much relevant background information about the research setting as possible to allow the reader a judgement about the similarity to other environments.

Dependability and confirmability emphasise the awareness of variance rather than its elimination, and the ability to track the research process and its results. To make the research trackable, the presentation of the data analysis process takes up a significant share of this thesis.

### **3.3.4 Triangulation**

Triangulating research results by using several methods and perspectives is recommended to increase validity (Ellram, 1996). According to Easterby-Smith et al. (2002) there are four forms of triangulation:-

- Theoretical triangulation: using models from one discipline within another discipline.
- Data triangulation: the collection of data from different sources.
- Investigator triangulation: several researchers collect and analyse data.
- Methodological triangulation: using quantitative and qualitative methods of data collection.

Combining quantitative and qualitative methods in one research project leads to a conflict of paradigms. Even though a researcher can stand firmly to one philosophical approach and use the methodology of another approach to strengthen the results, Easterby-Smith et al. (2002) recommend using data collection methods from one paradigm to avoid any trouble. In contrast many

researchers strongly encourage using several methods and methodologies. Mangan et al. (2004) call explicitly for a combination of quantitative and qualitative approaches, as that can provide greater insight than single methodology research. They also provide an example of using quantitative and qualitative research in one project. Grant et al. (2010) support the combination of quantitative and qualitative data. They see additional insights by mixing methods and also synergies between them. Also Näslund (2002) believes that a combination of methodologies is necessary to develop a discipline and progress. That raises the question whether a combination of approaches is a new approach on its own. Despite any potential philosophical conflicts the combination of quantitative and qualitative data is widely accepted today and triangulation in general is seen as a tool to increase the quality of research (Saunders et al., 2007; Collis and Hussey, 2003).

After having established the philosophical stand of this study and outlining the quality requirements towards research, the second half of this chapter is going to present the application and selection of research methodology and methods in this thesis.

### **3.4 Applied Research Methodology**

As mentioned by several researchers the area of in-store operations and its effect on OSA is underresearched so far (Fisher et al., 2006; Ton, 2002; Kotzab and Teller, 2005; Raman et al., 2001). The proposed research project is thus occurring at an exploratory stage of this research area.

The study seeks to achieve further understanding of how humans and systems interact at the last 50 metres of the retail supply chain and how they influence each other. To achieve that deeper understanding, the study needs to extract knowledge from retail employees who are involved in store logistics processes. It is hereby important to gain the participants' perception of the processes and situation, as decision making is based on that perception. The investigated situation is a professional environment. The research considers the participants

being in a social role at their workplace. Consequently, the research takes a stand in the qualitative paradigm.

Ellram (1996) provides a scheme for the selection of paradigm and research methods, which is shown in Table 2. Applying this scheme, the fact that the research is exploratory, inductive and aiming to answer a 'how' question leads to the proposition of a qualitative approach too (Ellram, 1996; Cooper and Schindler, 2003; Näslund, 2002).

**Table 2 Classification of Research Methods According to Key Research Objectives and Questions**

Objective	Question	Examples of Appropriate Methodologies
Exploration	How, why  How often, how much, how many, who, what, where	Qualitative <ul style="list-style-type: none"> <li>• Experiment</li> <li>• Case study</li> <li>• Participant observation</li> </ul> Quantitative <ul style="list-style-type: none"> <li>• Survey</li> <li>• Secondary data analysis</li> </ul>
Explanation	How, why	Qualitative <ul style="list-style-type: none"> <li>• Experiment</li> <li>• Case study</li> <li>• Grounded theory</li> <li>• Participant observation</li> <li>• Ethnography</li> <li>• Case survey</li> </ul>
Description	Who, what, where, how many, how much  Who, what, where	Quantitative <ul style="list-style-type: none"> <li>• Survey</li> <li>• Longitudinal</li> <li>• Secondary data analysis</li> </ul> Qualitative <ul style="list-style-type: none"> <li>• Case study</li> <li>• Experiment</li> <li>• Grounded theory</li> <li>• Participant observation</li> <li>• Ethnography</li> <li>• Case survey</li> </ul>
Prediction	Who, what, where, how many, how much  Who, what, where	Quantitative <ul style="list-style-type: none"> <li>• Survey</li> <li>• Longitudinal</li> <li>• Secondary data analysis</li> </ul> Qualitative <ul style="list-style-type: none"> <li>• Case study</li> <li>• Experiment</li> <li>• Grounded theory</li> <li>• Participant observation</li> <li>• Ethnography</li> <li>• Case survey</li> </ul>

Source: Ellram (1996)

### 3.4.1 Methodology Selection

Within the area of social sciences there are several research methodologies. The framework by Yin (2003) in Table 3 gives guidance which research strategy is related to what sort of research question.

**Table 3 Relevant Situations for Different Research Strategies**

Strategy	Form of Research Question	Requires Control of Behavioural Events?	Focuses on Contemporary Events?
Experiment	How, why?	Yes	Yes
Survey	Who, what, where, how many, how much?	No	Yes
Archival analysis	Who, what, where, how many, how much?	No	Yes/No
History	How, why?	No	No
Case Study	How, why?	No	Yes

Source: Yin (2003)

Yin (2003: p. 23) defines a case study as *‘...an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident.’*

Following tables 2 and 3, it occurs that the case study approach is the best way to answer this research question. The question asks ‘how’, cannot be investigated in an artificial experimental environment and it looks at a contemporary issue. Context and phenomenon cannot be separated, as replenishment happens within the busy life of a retail setting.

### **3.4.2 Case Study Approach**

Yin (2003) considers the case study approach as being a research strategy rather than a methodology, because different types of research and data collection can occur within case studies or even within one single case study. The case study approach is a very flexible methodology, as various data collection methods can be used. It can also be used in different settings and under different philosophical assumptions. Benbasat et al. (1987) define key characteristics of case studies. They state that case studies are explicitly suitable for exploration and also point out the high flexibility of the case study approach in using different methodologies within it.

The case study research approach can be considered as both a qualitative and a quantitative approach. Depending on their philosophical stand authors favour different ways of designing and conducting case study research (Näslund, 2002). Yin (2003) and Ellram (1996) have a more positivist stand and prefer to gain generalisable theories from multiple cases, whilst Stake (1994) focuses on the concentrated inquiry of a single case.

Stake (1994) classifies qualitative case studies into three different categories:-

- Intrinsic case studies, seeking to understand one particular case in depth.
- Instrumental case studies, examining one particular case to gain insight into an issue or refinement of theory.
- Collective case studies, looking at one or several cases to investigate a phenomenon, population or general condition.

Collective case studies lead to the most generalisable results of the three categories. However, this is traded off against a less deep investigation, regarding that a researcher is limited by the available resources. Consequently, collective case studies balance between the uniqueness of every individual case and the aim of achieving generalisable knowledge (Stake, 1994).



### **3.4.2.1 Single versus Multiple Cases**

There is an ongoing discussion whether single or multiple cases should be chosen for case study research. Benbasat et al. (1987) and Ellram (1996) agree that both choices are valid, but depend on the research aim. A single case can be critical to explain or falsify a theory, whilst multiple cases allow replicating and generalising results to develop a “*rich, theoretical framework*” (Ellram, 1996: p. 102). A single case study might also be used to explore a research area and then be followed by a multiple case study. Multiple cases are more desirable when the research wants to describe, build theory or test theory (Benbasat et al., 1987). According to Ellram (1996) the number of cases in a multiple case study should usually lie between six and ten.

Using several cases appears to be the most suitable way to investigate the research question. The research question is seeking for transferable knowledge and not only how OSA processes work in one single company. This is shown in particular by the fact that the study aims to collect cross-sector data from retailers of different product and format categories to gain knowledge about the phenomenon of OSA.

### **3.4.2.2 Case Selection**

The unit of analysis for the research project is a supply chain of a retail multiple. Most previous research in the area focuses on grocery retailer, due to their strong organisation through IGD, formerly the Institute of Grocery Distribution (Grant and Fernie, 2008) and the awareness of OSA as a factor for success in grocery retailing. However, as Grant and Fernie (2008) point out, the investigation of OSA of non-grocery retailers can be very valuable, as their logistics and consumer requirements are different to grocery retailers. The involvement of non-grocery retailers and a comparison with grocery retailers can therefore help to gain further insight into the issue of OSA. Hence, this study seeks to involve grocery and non-grocery retailers.

The sample will focus on high street retailers, including multi channel retailers but ignoring pure online retailers, as their supply chains are designed to serve fundamentally different requirements. Following Ellram (1996), multiple case studies should consist of six to ten cases. However, the qualitative approach leads to an in-depth investigation of each case. An in-depth investigation of a large sample size would make the data unmanageable. Furthermore, to present data from a large sample would require simplifying it to an extent that would cause a loss of depth and endanger the trackability. On the other hand, a sufficient number of cases are needed to draw conclusions from comparing the cases and covering a wider area of the retail industry, which increases validity. Considering these factors, six cases appear to be a suitable compromise.

Replenishment systems and human resources have to be managed according to local restrictions and cultural demands. Therefore, the study investigates retailers from two different countries. As the researcher has access and an understanding to the British and the German-speaking areas, these countries appear to be most suitable for practical and research quality reasons. But also from a perspective of selecting countries with different characteristics, these two areas appear to be very appropriate. So far British retailers failed dramatically to enter the low margin German retail market or did not even try to; whilst German retailers struggle as well entering the UK. A comparison of these involved retail markets and their different characteristic is provided in the country presentations chapter. The comparison of retailers within the UK and the German-speaking countries helps to identify cultural and legislative issues that influence performance. A number of retailers from both countries will therefore be included in the study.

Looking at the in-store replenishment in a retail environment will involve several levels of the supply chain. Involved in the replenishment process are supplier, logistics service providers and all stages in the retailer. Considered as highly relevant for the in-store replenishment system is the headquarters of a retail company, which designs planogrammes and distribution system. It also has an overall control and power of the company and sets key factors, such as policies

and hierarchy. Not less relevant is of course the store itself. The store manager can make decisions towards the employment of staff and can influence a store's performance significantly.

The unit of analysis will therefore be the retail chain company. The relevant parts are hereby the retailer's headquarter and the stores. Depending on the individual power of the DCs it might be necessary to have a look at them as well. However, at this stage of the research it is assumed that the DCs follow headquarter instructions and serve the stores according to their demand. Data collection will take place at the retailers' headquarters and two stores of each retailer.

### **3.5 Data Collection Approach**

The study gathers data by interviewing employees who design and are responsible for replenishment systems at the retail company and also interviews staff who has to use and are probably part of these systems, such as store managers and store staff. Näslund (2002) also recommends that in addition to asking questions the researcher should also 'hanging around' in the investigated environment.

According to Fontana and Frey (1994) interviews can be categorised in structured, group and unstructured interviews:-

- Structured interviews give little room for response variation. This technique usually tries to keep the answering process clear from any influence by the interviewer.
- Group interviews can be either structured or unstructured. The most popular example for group interviews is the focus group. The interviewer needs specific moderation skills for this form of interview, as the participants have to be kept focused on the question and encouraged to contribute; at the same time the researcher has to be aware of not pushing the group towards a certain answer.
- Unstructured interviews follow the interaction between interviewer and respondent. The interview is using open questions and is mainly led by the respondent. The interviewer opens the interview and reacts to the responses. The researcher aims not to limit the inquiry to any extent.

Silverman (2003) criticises an inflationary use of interviews in social research. He accepts Heritage's (1984) statement that "the world is a pervasively conversational one in which an overwhelming proportion of the world's business is conducted through the medium of spoken interaction". However, for Silverman that does not mean that investigated external realities can be read straight out of collected spoken data. He does not criticise interviews as a data collection method itself, but much rather sees a wrong handling of the analysis of interview data. His opinion will be referred to later on in the explanation of the data analysis. In essence he recommends open ended question for social research; as he finds that in-depth responses can be best gained with this technique. However, a reliance on sheer open or in-depth interviews would lead to the problem, that interviews –particularly in a multi case study– became incomparable. Hence, the study will have to balance between the wish for gaining in-depth data from open interviews and the quality requirements, as they are described previously in this chapter. A semi-structured interview approach therefore appears to be a good solution for fulfilling those demands.

For research at an exploratory stage it seems to be more suitable to use a less structured interview technique. A very structured interview would not allow any unexpected answers. It would also not allow the interviewees to make any additional comments to their answers. A less structured way on the other hand will give respondents the chance to include their feelings and perceptions of systems onto them. It will also show underlying values and motivations in the system design. Nevertheless, in a multiple case study an entirely unstructured interview technique would prevent any comparability, as every single interview would go into its own direction. Thus, a semi-structured interview technique seems to be most appropriate to answer the research question.

Furthermore, the interviews should be conducted face to face and if possible within the interviewee's usual work environment. That will enable the researcher to investigate environmental influences towards the work situation. Additionally, respondents might behave differently in their work environment than outside. Interviewing at the work place also gives the interviewer the chance to visit the investigated organisation and notice the setting and environment.

One might argue that group interviews or focus groups could be chosen as a potential data collection method. These methods have the advantage that the way of decision making and the interaction and behaviour between individuals could be brought up. Nevertheless, that includes the disadvantage that viewpoints are difficult to be located to an individual (Flick, 2002). Additionally, the study's focus is on existing systems and how they are used and executed rather than how decisions about their design are made between individual actors in these systems. Participants from lower hierarchical levels might in reality not be included in the decision making processes of systems design. Their presence in a group discussion would therefore not reflect the reality of the organisation.

Also group interviews and focus groups reveal common processes of how problems are solved within a social setting. The research participants however are at different levels of the supply chain and might often not interact with each other in reality. They are also from different hierarchical levels of the

companies, which is assumed would restrict participants on a lower hierarchical level to express their full and honest opinions. One major aim of the study is to investigate whether there is a gap between players in the supply chain. Such a gap could only be identified by talking to participants in confidentiality and anonymity without the presence or control of their superiors (Flick, 2002).

On the practical side group interviews or focus groups of the same hierarchical level but from different companies would be difficult to conduct, as participating companies will come from different countries. Further, the retail industry in Europe is described as highly competitive (Competition Commission, 2008). Retailers may be highly protective when it comes to their logistics processes, as these are seen as a major competitive advantage. A participation in group interviews or focus groups is therefore assumed to be much more unlikely to achieve than in individual interviews.

Depending on the research question a quantitative or a qualitative approach is more suitable. As the research project is investigating in-store replenishment systems at an exploratory stage, and the investigation being interested in the participants' perceptions, a qualitative stand is chosen. The research process is inductively extracting knowledge and the issue cannot be investigated outside its natural setting of the retail setting. Hence, a case study approach is selected to address the research questions.

The choice between single and multiple case studies is based on the research aim. Single case studies are more suitable for explaining or falsifying a theory. Multiple case studies are more desirable to describe, build or test a theory. This study seeks to widen the knowledge about in-store logistics processes and to extract knowledge from comparing cases. To extract knowledge for comparison, a number of cases from different backgrounds needed to be chosen. Also the quality measure of transferability is increased through multiple cases, as the covered area is extended. Multiple case studies also include the feature of triangulation. Through the inclusion of several perspectives in the study, the research should be more valid.

Despite the advantages of multiple cases for the research, one cannot ignore the rising complexity of data management and the corresponding threat to the trackability of the research. Hence, although multiple cases were chosen, they needed to be limited to a number that remained manageable.

Data is collected using semi-structured interviews from across six retail companies from the UK and the German-speaking nations. These interviewees are conducted at all levels directly involved in the store logistics processes: the fulfilment personnel at the store, store managers and central function managers.

After having decided on the philosophical stand, the research strategy and the way of collecting data, the second half of this chapter is going to explain the underpinnings of the data analysis approach and how the collected data is going to be analysed.

### **3.6 Data Analysis Approach**

As described in the previous chapters, the study is taking place in two cultural areas, namely the United Kingdom and the German-speaking nations of Austria and Germany. Following Ellram's (2002) framework for multiple case studies, in total six retailers were chosen for the study. Half of them operate in the UK; two are based in Austria, and one is from Germany.

In each area two grocery retailers and one non-grocery retailer are chosen. This is due to the fact that the grocery industry is fairly active and advanced in the research about on-shelf availability. The non-grocery sector is not well investigated so far, and it is therefore only consequent to involve both sectors in this study (Grant and Fernie, 2008). All participating companies belong to the top retailers of their sector, and due to their size and number of stores they all show a certain level of organisation and specialisation within their companies.

Data was collected by conducting semi-structured interviews with two store managers, two customer service assistants, and one senior logistics manager

from central functions. The objective was to cover all hierarchical levels in the participating organisations to catch their different views on the in-store logistics processes.

The interview guide was constructed in a way that generates long answers from the participants. Nevertheless, the interviews followed a certain structure to make interviews comparable. Therefore the interview guide consisted of three open questions. Further details in areas where answers would be expected based on previous research were investigated by probes in the according areas after the initial response from the participant. The development of the interview guide and the factors influencing it can be found in the previous chapter 6.

### **3.6.1 Data Analysis Strategy**

Conducting case study research needs a clear ‘chain of evidence’. The reader must be able to understand what the researcher did, how and why it was done. Therefore, a case study protocol is recommended to ensure the captured data and the way it was captured can be shown. The researcher has to present the structure of interviews, protocols of interviews and protocols of visits to relevant places. This is essential for the validity of the case study (Ellram, 2002).

Records from interviews and observations will be analysed for patterns, similarities and dissimilarities regarding the replenishment system and the surrounding management systems and organisation.

The research project is using interviews and observations for data gathering. The collected data will consist of transcribed interviews and the researcher’s observations.

Quantitative and qualitative data have different natures, which is leading into different ways of analysing them. The three major differences between quantitative and qualitative data are shown in Table 4.



**Table 4 Distinctions between Quantitative and Qualitative Data**

Quantitative data	Qualitative data
<ul style="list-style-type: none"><li>• Based on meanings derived from numbers</li><li>• Collection results in numerical and standardised data</li><li>• Analysis conducted through the use of diagrams and statistics</li></ul>	<ul style="list-style-type: none"><li>• Based on meanings expressed through words</li><li>• Collection results in non-standardised data requiring classification into categories</li><li>• Analysis conducted through the use of conceptualisation</li></ul>

Source: Saunders et al. (2007: p. 472)

Quantitative data is analysed using statistics; usually with the help of a suitable software package. But also qualitative data can sometimes be quantified, e.g. when counting the occurrence of certain words or analysing the proportions of positive and negative comments in a speech (Saunders et al., 2007).

Huberman and Miles (1994) split data analysis in qualitative research into three sub-processes:-

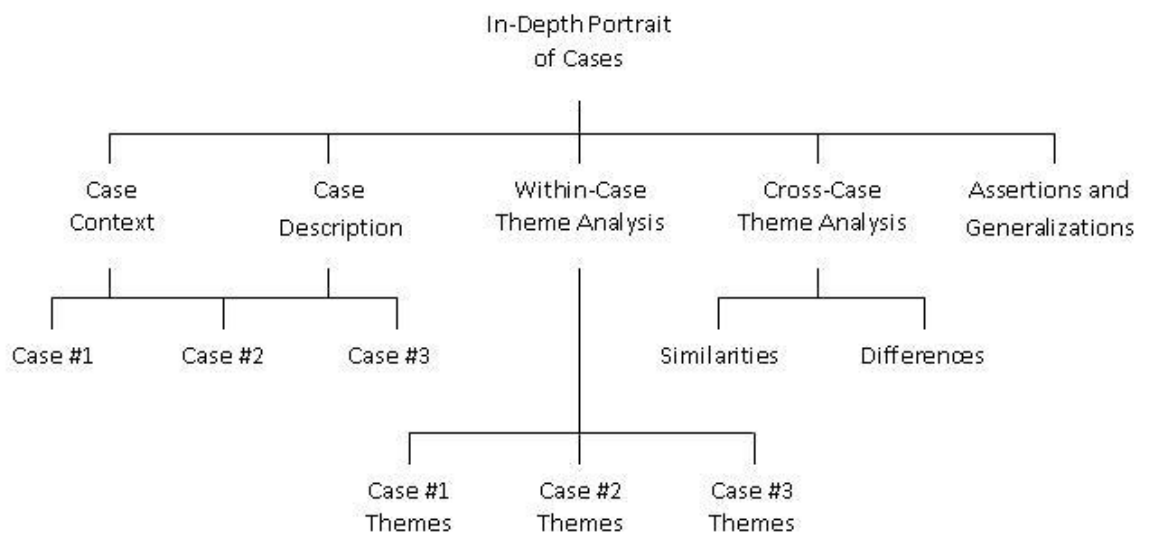
- Data reduction, which means on the one hand to define the field of research and therefore to exclude parts of the entire population, and on the other hand data reduction in the gathered data, which can be coding and clustering.
- Data display, which is the mapping and structuring of data.
- Conclusion drawing and verification is the final step of identifying and interpreting patterns, clusters and themes within the data.

Hence, the data analysis process starts previous to the data collection. The data collection has to be designed in a way that answers the proposed research question accordingly. Data analysis issues have to be interwoven in the data collection process and design (Huberman and Miles, 1994; Saunders et al., 2007).

The design of the case study protocols and interview protocols is going to be the next step of this research project. Accordingly, that stage has to consider the requirements of data analysis and interpretation. In inductive research, issues arise whilst the research is conducted. The research project therefore includes a pilot study to ensure that data is collected in the right way (Ellram, 1996).

The analysis of the cases in this study follows a framework suggested by Creswell (2007). As the study explores in-store processes, investigates them, and develops theory through comparing them with each other; Creswell's framework occurs to be most suitably. In this research project a case is defined as one retail company.

**Figure 9 Analysis Framework for Multiple Case Studies**



Source: Creswell (2007: p. 172)

The framework works in several steps. It starts with setting the case into the context of the study and supplying relevant background information. This happens in the case contexts chapter, which provides information about the investigated countries and retail markets. The individual cases are described and set into the context at the within-case analyses in chapter 6. A general

description of the settings and the interview process will be given in the case description. Afterwards the data will be analysed on a fact base, which is mostly focused on understanding the logistics processes within the company. But much deeper goes the reflective analysis of the gathered data. Following several calls for more qualitative research in the logistics discipline (Kent and Flint, 1997; Mangan et al., 2004), the study uses a narrative approach to analyse the interviews. The following subchapter will explain this approach in more detail. The insights gained through the analysis of each case will then feed into the analysis within the case, across cases and into the resulting assertions and generalisations.

### **3.6.2 Data Analysis Method**

There are many ways to analyse interview data. In the first instance one can divide between quantitative and qualitative ways. As described in the research methodology chapter, this study was using a qualitative research approach. Silverman (2003) explicitly criticises the use of quantitative methods on qualitative data. He describes the knowledge in interviews as external realities to which researchers can only gain access indirectly through analysing the interview. They can therefore not simply be read off, but knowledge has to be extracted from them.

But significant differences between the qualitative research approaches can be noticed too. Schwandt (2003) sees these differences originating from three considerably different epistemological backgrounds in qualitative research. For him qualitative inquiry developed from interpretivism, hermeneutics and social constructionism. Interpretivism wants to understand the human action, in contrast to the natural sciences, which aim to explain the world. For interpretivists human action itself is meaningful and contains intentional content that is connected to the *“system of meanings to which it belongs”* (p. 296). To understand these human actions, one has to interpret them. Interpretivism understands the hereby discovered knowledge as objective, even though it was gained using subjectivity.

Philosophical hermeneutics instead says, that “*understanding is interpretation*”, (Schwandt, 2003: p. 301) as understanding is an underlying activity in everyday’s life. Interpreting is seen as not being distinct from the researcher. Prejudgments and traditions that form our way of understanding cannot be set aside during the act of interpreting. The point of philosophical hermeneutics is not trying to get rid of all prejudgements, but rather taking them into consideration in order to understand others. It is therefore the radical non-objectivism, which sets it in contrast to interpretivism (Schwandt, 2003).

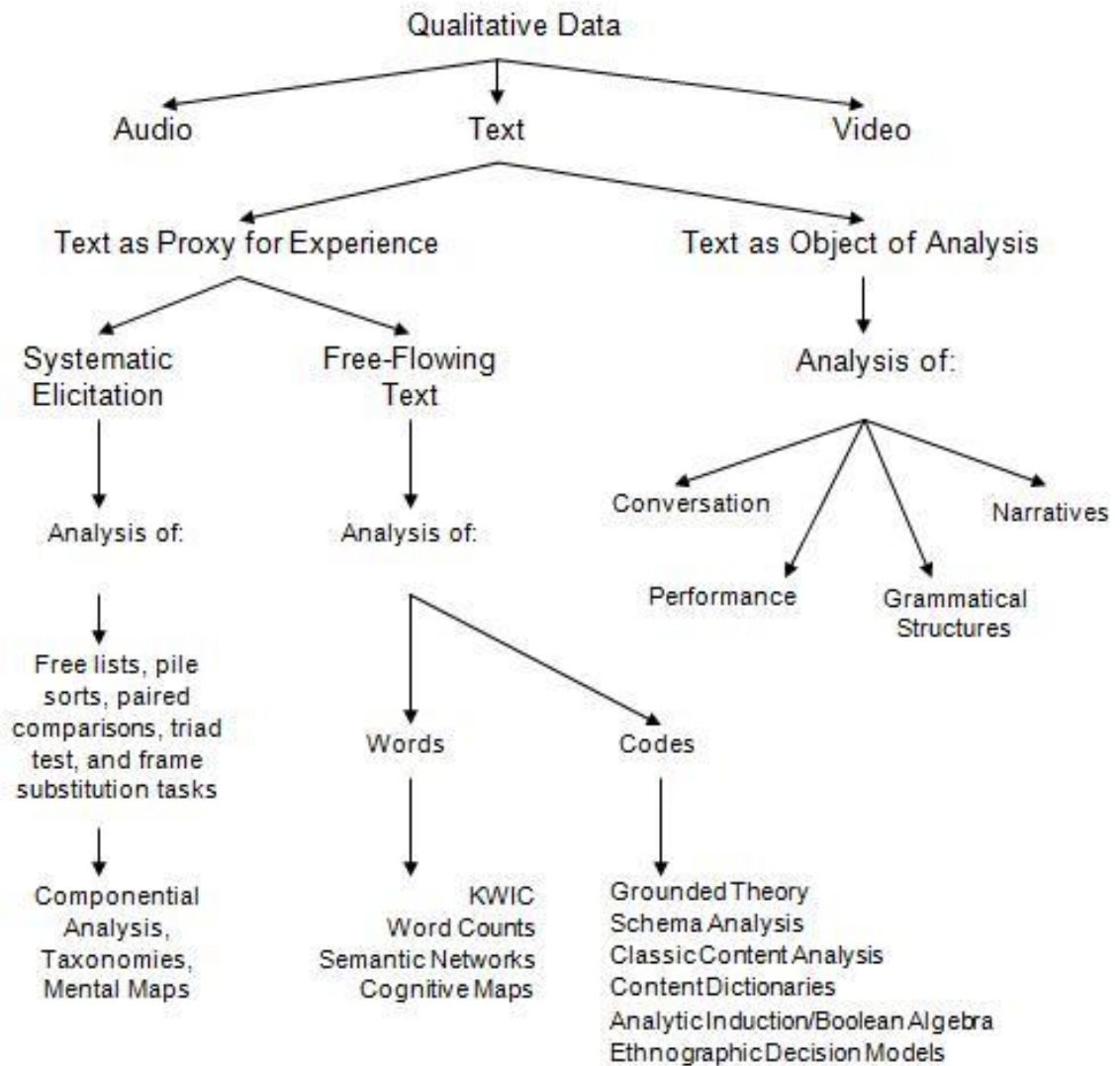
Social constructionism sees the gaining of knowledge as an active process. Everyone is not only recognising the world, but whilst we are doing this, our mind constructs abstractions and concepts out of this data. Our interpretations of the world are constructed against the background of common understandings, practices, and languages. For social constructionists therefore social factors have to be taken into consideration when interpreting data (Schwandt, 2003).

Nevertheless, all three approaches –interpretivism, hermeneutics and social constructionism– are interwoven, as they all share the view that in the world of human studies there is no external reality which can be caught without including the process of human structuring (Schwandt, 2003). However, the way one understands the cognitive reception of the world results in different approaches of analysing qualitative data. Following a social constructionist point of view, rhetoric is used in narratives to make actions and events understandable to others. Participants express themselves in responses in a way that includes information about their perception of the reality without explicitly mentioning or even defining these understandings. It can therefore be assumed that in an interview or its transcript, there is an underlying knowledge in the stories and the language that can be extracted by the researcher through the use of narrative analysis.

Regarding a classification framework for qualitative data analysis techniques, Ryan and Bernard (2003) created an overview, which can be seen in Figure 10. It focuses on the predominant type of data in qualitative research, which is text.

Even though many studies derive the text for their analysis from oral interviews, which are later transcribed; these transcriptions are used as the base for the analysis and are therefore classified within the text stream.

**Figure 10 Typology of Qualitative Techniques**



Source: Ryan and Bernard (2003: p. 260).

Following a social constructionist approach, this study used the text as the object of analysis. As social constructionism understands the gathered data as the expression of cognitive impulses based on shared culture and meanings, it does not want to use it as a proxy. Much rather it wants to analyse the text itself to understand how these cognitive impulses are expressed in social constructs.

It is therefore concerned about the translation results from cognitive data into text, which is the text itself.

### **3.6.2.1 The Documentary Method**

Using a narrative approach, the study chose Bohnsack's (1989) documentary method (*"dokumentarische Methode"*). This method is part of the group of reconstructive methodologies. Reconstructive means, that the researched issue has to be transformed into an objective mode, before it can be analysed. As social constructionism believes that the perception of reality is expressed in a construct, this construct has to be disassembled. The interpretation of the text happens sequentially along the stages of the disassembly. These stages are the reconstruction of telling, interaction and discourse. Reconstructive methodologies are particularly recommended for exploratory research (Wagner, 1999), which matches the aim of the research project. The human factor in on-shelf availability is underresearched, and so is the issue of on-shelf availability in non-grocery retailing. The selection of a reconstructive methodology therefore seemed to be highly appropriate for this study.

Furthermore, the research question of the interaction between humans and systems on the last 50 metres of the retail supply chain is a good opportunity to take a social constructionist perspective. Humans perceive their situation and surrounding effects onto them in different ways. The way retail employees behave and their performance strongly depends on how they perceive their environment and their logistical system. It is also not only interesting how they perceive that situation but also what affects their perception. By extracting types one can understand how humans (the retail employees) perceive their interaction with systems. Much more one can also identify dimensions and characteristics that influence this situation. Different types of employees have to be managed differently and there might be a mix of different types unequally allocated across hierarchical levels that has a negative influence on the interaction.

The documentary method is based on the idea of discovering something common in the uncommon, something general in the individual. Hence, reconstruction has to consider not only the subjectively intended meaning, but previously has to consider the objective structure of meaning. *“Meaning is the result of particular social interaction. Through reconstruction, the meaning’s genesis and establishment on the existential level of social interaction are revealed”* (*“Sinn ist Resultat konkreter sozialer Interaktionen. Durch Rekonstruktion wird seine Genese und Verankerung in der existentiellen Ebene sozialer Interaktionen offengelegt.”*) (Wagner, 1999: p. 65). Central for the documentary method is the methodological differentiation between the immanent and the documentary meaning. Thus, the interpretation has to take place in two steps: the rephrasing interpretation and the reflective interpretation. The rephrasing is about the immanent meaning. The words are rephrased in a summarising way. This is based on the decoding of the mostly implicit structure and topics. Only in the following reflective interpretation the development of discourse and reality is analysed (Wagner, 1999).

The practical way how the documentary method can be applied in research, will be shown in the following chapter.

### **3.6.2.2 Application of the Documentary Method**

The data collection followed a qualitative, narrative approach. The narrative approach wants to generate the communication by the participant. It needs interview transcripts that contain narratives created by the interviewee. Only after the interviewee finishes the response towards an initial narrative generating question, the researcher will probe certain aspects (Nohl, 2006). The way this approach led into the interview guide is explained in more detail in chapter 4 about the development of the interview guide. The interview guide itself was structured in three sections. Each section was started by an open question, asking the participant to talk widely about the according issue; which was then followed by prompts in that area about issues that would had been expected from previous research.

The narrative approach is based on social constructionism. It assumes that the knowledge how participants construct their world is not directly available. This knowledge has to be gained from observations, actions, symbols and behaviour. The aim is to reconstruct and understand social actions that are underlying in the responses (Meuser, 2006).

The data analysis uses transcripts of the conducted interviews. It extracts upcoming topics from the participants' responses. It differentiates between those that arise from the respondents intrinsically and those that are mentioned after probing for them. Further, the interviews have to be seen in context of the particular case circumstances such as the cultural surrounding and the workplace environment. Generally, during an open interview there are three text types arising: narrative, description, and argumentation (*"Erzählung; Beschreibung; Argumentation"*).

The analysis focuses on narrative pieces of the transcripts, which are particularly useful. Narrative texts include the underlying knowledge and expression, which can only be gathered in purity indirectly. Argumentative pieces however, are already contaminated by a defensive mode of the participant. The participant wants to justify its position towards the interviewer. As the researcher and the interviewee come from different backgrounds and belong to different groups, these justifications need a common abstract knowledge, which is removed from the actual practice and action.

Therefore argumentative pieces are less useful for a narrative approach and the analysis focuses on the narrative pieces. These pieces are identified not only by length, but much more by the text type. Narratives are characterised by a start and an end, they portray actions and incidents. In descriptive pieces continuously reoccurring actions and activities are shown. Argumentative pieces show theoretical summaries and constructs to explain the own or someone else's actions and behaviour (Nohl, 2006).

From a qualitative perspective, every narrative –and therefore also those derived through interviews– consists of two meaningful ways: what is said, and



how it is said. *“Each narrative has two parts; a story and a discourse. The story is the content, or chain of events. The story is the ‘what’ in a narrative, the discourse is the ‘how’. The discourse is rather like a plot, how the reader becomes aware of what happened, the order of appearance of the events.”* (Sarup, 1996: p. 17).

Consequently, the data analysis has to take the existence of these two levels into account. This can happen by using approaches based either on interpretivism or social constructionism, as they both consider that there are two levels within a narrative (Fontana and Frey, 2003). The documentary method is based on social constructionism. The idea that the interview has to be deconstructed in order to reveal the reality expressed by the respondent leads to the method’s tool of deconstructing content and discourse separately.

Based on the narrative parts of the transcribed interviews, the analysis goes through three steps. It starts with the rephrasing interpretation, which is concerned about ‘what’ is said in the interview. In this part the researcher looks out for topic changes and the researcher rephrases the text. This is necessary to distance the researcher from the content and to raise the awareness that the content has to be interpreted (Nohl, 2006).

The rephrasing interpretation is then followed by the reflective interpretation. The reflective interpretation cares about the ‘how’ in the interview. It is concerned about the way a topic is treated. It does not mainly focus on what the reality is, but how this reality is constructed. To gain this insight, it reconstructs the frame in which reality is created (Nohl, 2006).

This frame is then used by the third step, the comparative analysis (*“komparative Analyse”*). The comparative analysis looks at how the interviewees responded to certain questions, the way they tackled the problem or the issue, and in which sequence they constructed their response. By comparing the results of several interviews, different types can be extracted (Nohl, 2006).

Typology is the grouping of types based on the differences and commonalities of characteristics and variables of an object. A type is created to sum certain characteristics and variables together. Within one type elements should be as similar to each other as possible. Therefore, in the type one looks for similarities and aims for a high internal homogeneity (*“interne Homogenität”*) (Kluge, 1999).

At the same time, types should differ as much as possible between each other. It aims for a high external heterogeneity (*“externe Heterogenität”*). However, all types at the same level have to belong to the same investigated group. Consequently, they share commonalities, e.g. manual workers with less than college education. The types that are developed on that level cannot be transferred to another group with different characteristics, i.e. the resulting types from the investigated workers without college education cannot claim validity for an investigation of senior managers with postgraduate education (Kluge, 1999).

Types can be classified by looking for very average or ideal types. Generally, types can be ideals or real. This is expressed for example in the level they abstract reality, their complexity; whether they are tied to a certain point in time or general. Therefore the definition of type classes and characteristics is essential to remain systematic in the large variety of types. The major difference between aiming for an ideal type or a real type is that ideal type claims general validity, whilst the real type is limited to the investigated cases. The ideal type can therefore be used outside the cases; but it also reduces the variety within the cases, as it needs generalisations to be widely usable. General types, or ideal types, shall only be used with caution. They only represent a part of the reality and can be used as a helping tool. They can never fully represent the entire reality. These types are reducing reality to make reality easier accessible. It should not be mistakenly considered as a copy of reality (Kluge, 1999).

When allocating elements and characteristics to a certain type, the borders between the types can become unclear the closer they get to each other. Also some characteristics of an element may appear in two types. Constructing an average or ideal type helps to recognise types and to make the allocation to a type easier. A type can be based on several variables. Types can be classified

in several dimensions, where each dimension shows several attributes; e.g. education / hierarchical position in the company. Education and hierarchy would be dimensions; whereas each dimension can have several attributes, such as trained, college, university / management, senior management, board members. The classification can be multidimensional and does not have to be limited to two (Kluge, 1999).

For practical reasons Kelle and Kluge (1999) developed six methodological rules for developing types on contrasting and comparing cases:-

- Comparison of cases and the development of types need a heuristic frame. Theoretical knowledge previous to a research project is no threat but much more lenses through which the researcher can identify types when analysing qualitative data. Otherwise the researcher risks drowning in the data, if one relies on the automatic emergence of types without any presuppositions.
- Such a heuristic frame should not be too tight, as it would harm the advantages of an exploratory research strategy. The frame should not contain any empirical concepts, but abstract or even everyday concepts.
- The number of investigated cases cannot compete with a quantitative survey study, as the analysis of qualitative data takes much longer. The aim of picking cases is therefore not statistical representation but the heterogeneity of cases. Nevertheless, it needs rational concepts choosing a sample that covers the variance of the researched area.
- Even though every case is analysed individually, the researcher has to keep the other cases and data in mind. This is necessary to ensure that cases are cross comparable.
- The development of types needs systematic comparison of cases. The development process has to be traceable.
- Identifying and describing differences and similarities between cases is only one step of developing types. The aim of a type development study is reached when structures and patterns are discovered and described.

After having gone through the steps of rephrasing interpretation, reflective interpretation and eventually developing types out of the raw data; the analysis of the raw data is finished. Referring back to Creswell's (2007) framework, it is of interest to compare these types with each other and to spot the borders between them. The chosen cases cross cultures, shopping segments and hierarchies. This wide coverage of retail employees therefore provides many dimensions for comparison and to develop types.

Having explained the origin of the documentary method, it should not be forgotten that the method was developed for an educational research study in the social sciences, which used open interviews. As outlined in the interview guide development such an open interview structure could not be chosen for this study due to practical reasons of access and provided time resources at the companies. The study therefore put more importance on the rephrasing interpretation and less on the discourse compared to the original documentary method as provided by Bohnsack (1989). Further the study was also interested in the processes that happen at stores, which needed the 'what' facts from the rephrasing interpretation. Therefore rephrasing interpretation and reflective interpretation became more interwoven in this study than suggested in the original method. This is considered as a development of the method, being made applicable to the study's environment and requirements.

### **3.7 Conclusion**

At the beginning of this chapter the main concepts in research philosophy were introduced. Epistemology deals with the nature of knowledge; ontology with the nature of reality and axiology is concerned about the influence of values in research. Different stands in these categories lead a researcher into two main paradigms: quantitative or qualitative research. Whilst a quantitative research usually tends to take a positivist, objective and unbiased approach; a qualitative researcher tends to the opposite. However, these two positions only represent

the extremes of a continuum and various philosophical positions in between can be taken.

After this first half of the chapter, the second half looked at the data analysis method. The data analysis approach follows a framework suggested by Creswell (2007). This framework provides a strategy to guide through the analysis process. It starts with providing case context and description. This is then followed by the within-case analysis, cross-case analysis and eventually assertions and generalisations. As the sample size of at least five interviews at each of the six retailers is quite large for a qualitative study, such a framework helps to prevent the researcher and the reader from getting lost in the data and the analysis process.

The method used for the data analysis is based on social constructionism. This epistemological position understands reality as being constructed between individuals based on common values, ideas, culture, etc. A way of getting to the meaning in interviews is to deconstruct the interview. Reconstructive methodologies analyse the content and the discourse in interview transcripts, because they aim to understand how meaning is created. The raw data for this analysis comes from narratives in transcribed interviews. Reconstructive methodologies do not need to analyse entire interviews, but they identify narrative segments and focus on them, as they are particularly rich.

The documentary method needs three steps for analysing such narrative segments. Firstly, it rephrases these segments, which concentrates on what was said. Then the rephrased transcript undergoes a reflective interpretation, which is concerned about how things were said. And eventually a comparative analysis develops types from the previous steps' results by categorising them under different dimensions and characteristics.

A social constructionist perspective matches the research question about human and system interaction. Originating from social sciences, one may want to assume that individuals construct different perceptions of reality. By deconstructing those perspectives the researcher can extract dimensions and

influencing factors how those perceptions are built. The understanding how and why situations are perceived in a certain way by retail employees reveals the reasons for the interaction and the relevant factors that make one understand how humans and systems interact on the last 50 metres of the retail supply chain. The use of the documentary method as a reconstructive method is most suitable to understand the participants' perception layer by layer, whilst allowing comparisons across cases and variables. It also fulfils the quality requirement for traceability to the most, as it relies on documents, rather than only impressions from the researcher. This is necessary, as the research takes place in two different linguistic areas and traceability is therefore more difficult than in a mono culture study.

In the next steps the interview guide is going to be developed, before the cases' settings are portrayed and the thesis commences with the data analysis process.

## 4. INTERVIEW GUIDE DEVELOPMENT

As outlined in the previous chapter, this study is using a multiple case study approach. For the data collection, semi-structured interviews were conducted at six participating retailers from two different cultural areas. The data collection via interviews requires preparation in terms of creating an interview guide that leads the researcher through the interview process. The creation of this interview guide is described in this chapter. It includes a pilot study using and testing the preliminary interview guide, before resulting in the final interview guide that was used for the main study's data collection.

### 4.1 Interview Structure

Considering the philosophical stand and the context of the research study as discussed in the previous chapter, semi-structured interviews were selected to be the most appropriate way to collect data answering the research question. Generally, Kvale (1996) regards interviews as a “*specific form of conversation*” (p. 19). It involves interaction, reflection and content. Even though Robson (1993) agrees that a research interview is a form of conversation, he points out that it differs in some ways from a normal social conversation. Rubin and Rubin (1995) see common shares between qualitative interviews and ordinary conversations, as they both follow a question – answer structure. The major difference for them is the intensity of listening; and the depth and detail of a qualitative interview.

Przyborski and Wohlrab-Sahr (2008) criticise the comparison of guided interviews with ordinary conversation. They warn that the openness of an interview should not be confused with being unstructured. Also a qualitative interview has to follow a structure and is set up for the purpose of answering a certain research question. To answer that question, the qualitative interview has to stay within a theme, even though it is not characterised by a strict regime of question-answer patterns. A semi-structured interview technique is particularly

recommended for research questions investigating everyday routines and actions. The replenishment processes in a retail store can be considered as such an everyday activity. The activity itself might be considered as something very ordinary by retail employees. The application of a semi-structured technique is therefore most appropriate.

Kvale (1996) also suggests conducting qualitative research interviews in a semi-structured manner. In his understanding they must be executed using an interview guide, which indicates relevant topics and potential questions. How closely the interview guide shall be followed depends on the particular research design and the interviewer's judgement.

Each interview question can be portrayed using two dimensions: thematically, which means the relevance to the research topic; and dynamically, which means the interpersonal relationship between interviewer and interviewee (Kvale, 1996). Robson (1993) sees the importance of the interpersonal side of a research interview. He recommends taking both dimensions into consideration when planning the interview, but also whilst executing the interview.

Any research interview should follow a certain pre-set structure. Depending on the form of interview the interviewer can deviate more or less away from that structure. A usual interview will have questions to be asked in a proposed sequence. Each question can have subsequent probes and prompts. Prompts are more common in structured interviews and mean a range of possible answers, which can or cannot be read out to the interviewee. Probes are meant to make the interviewee expand the response to a question. That does not only mean the encouragement to talk on its own, but also trying to get a deeper response (Robson, 1993). The researcher uses probes to follow up on answers and topics. Also the interviewee will be asked to describe responses in more detail. And the interviewer should use probes to clarify the participant's words. In qualitative interviews the researcher should not take common understandings for granted but rather clarify meanings, as those are assumed to be based on the respondent's personal and individual experiences (Taylor and Bogdan, 1984).



The interview structure should be started with an introduction at the beginning, introducing the researcher and the purpose of the interview. It will also include ensuring confidentiality and the request for permission to record the interview. The first questions should then be more on the dynamical dimension, trying to relax the atmosphere by nonthreatening question. This is followed by the main body of the interview. In a semi-structured interview setting the order of questions can be spontaneously changed. Generally, the researcher should keep riskier questions to the main body's end (Gillham, 2000).

In principle, Gillham (2000) recommends to put demographic questions about the interviewee at the beginning of an interview. However, he also suggests asking questions of higher involvement at the end of an interview. Hence, the positioning of demographic questions and questions about the previous career path of an interviewee will depend on the depth of these questions and the relationship between researcher and interviewee. In the case of those being strangers to each other, questions about career and personal background might be perceived as intruding into the participant's personal space and therefore better be asked further towards the end of the session.

At the end of the interview the researcher should sum up the conversation and give the participant room to add ideas or correct previous statements. Eventually, the closure of the interview will demand the researcher to thank the participant. After switching off the tape recorder and having ended the interview situation, participants might add points on the way to the door that can enrich the interview further (Robson, 1993; Kvale, 1996).

#### **4.1.1 Quality of Semi-Structured Interview Data**

The methodology chapter was concerned about the general quality of research. This chapter however will look at the specific problems in the quality of data collected from semi-structured interviews.

Using a qualitative approach, alternative quality measures are used –as suggested by Halldórsson and Aastrup (2003), whose quality measures concept is presented in Table 1 in chapter 3.3.

Semi-structured interviews provide the opportunity to probe answers further. Hence, the researcher can check during the interview whether both parties understand terms in the same way, which increases credibility and dependability. The researcher can ensure credibility through checking for face validity on the spot and can use the knowledge immediately to investigate where a difference in meaning derives from.

Also the use of open questions helps this data collection method to overcome potentially existing biases. Additionally, the researcher needs to record environmental circumstances, the surrounding and background information of the interviewee to set responses and potential biases in context. This increases dependability, as it helps to track down variances. Trackability of data back to source is crucial in relation to confirmability. The trackability is therefore embedded in the data management and analysis process.

On the issue of transferability, semi-structured interviews have a weaker stand, as a full generalisation is difficult. However, as a qualitative method they do not claim to create generalisable knowledge valid for the entire population. Nevertheless, Saunders et al. (2007) argue that a well conducted and rigorous case study can be more helpful and better used in other contexts than studies with a lack of rigour. Consequently, the researcher must focus on ensuring rigour by pointing out the logical connection between the methodological stand and semi-structured interviews as the most appropriate method to investigate the research problem. A particular quality issue arises in this study, as it uses interviews from two different lingual areas. The interviews are conducted in the according local language of the retail store and the interview guide therefore needs to be translated into German. To ensure the consistency between the English and the German version of the interview guide, a qualified independent third party was asked to translate the German interview guide back into the English language. The result appeared to be in line with the original version and

therefore consistency of the interview guides from a lingual perspective can be concluded.

#### **4.1.2 Core Questions and Probes**

Arising from the literature there are several topic areas to be covered when investigating the interaction between humans and systems at in-store operations. This chapter will identify the topics which have to be covered to answer the research question. It will also develop questions and probes for each subtopic.

Angerer (2004) argues that a concept to improve overall supply chain performance should consist of processes, technology and organisation/human resources. Unfortunately, he divides the retail supply chain in 'upstream supply chain' and 'store operations'. This research project however takes a more holistic supply chain view and considers the retail supply chain including store operations. One could even extend the retail supply chain to the consumer's house; taking consumer logistics and potential recycling activities into consideration (Teller et al., 2006). This research project takes the stand that store operations have to be seen a part of the supply chain in order to improve OSA and should not only be considered as an extension of the upstream supply chain. The research project is therefore aware of the entire retail supply chain and that decision making along the supply chain affects other parts of it. For practicality reasons the investigation will have to focus on in-store operations, but it will not ignore the influence of other players in the supply chain.

According to Hise et al. (1983) human resources and their individual background have a significant impact towards retail store performance. Therefore, this study will add characteristics of the interviewee and its background as a topic area together with characteristics of the retail company and its workforce. The positioning of the retail company in the market and the store format are also key information to investigate OSA in context. Placzek (2007) categorises retail companies and deduces different strategies to

deal with OSA from them. Depending on the positioning of retailers, their products and their customers in-store processes have to be looked at from different angles.

The influence of the workforce towards in-store operations and OSA is shown in several studies (Ton, 2002; FranklinCovey, 2006; Human Synergistics Inc, 1986; Hise et al., 1983). They identify key figures of human resources of being relevant towards store OSA performance. Hise et al. (1983) find demographic factors such as age, marital status, education level and job experience of the store manager influence a store's performance. Human Synergistics (1986) disagrees with the influence of demographic factors towards store effectiveness and sees the time spent in an organisation as the major point for effective store execution. Demographic factors of the interviewee should therefore include the past career path of the interviewee and the time spent in the organisation and in the current position. The positioning of the retail company itself, its size in number of stores and employees will have to be enquired as well. Eventually the characteristics of the individual store have to be shown to set the research interview in context. The store format, store size and number of employees, location and surrounding market potential are needed to analyse the interview (Human Synergistics Inc, 1986; Foster et al., 2008).

Building on Kotzab and Teller (2005) the starting point is the mapping of the current replenishment process up from the store's backdoor, looking at the flow of physical goods and information. They primarily focussed on the flow of physical goods; whilst this research project will map the in-store processes taking a focus on information triggering activities of replenishing physical goods. Nevertheless, the applied framework is still fully valid under these circumstances and will therefore be taken as a base to map in-store replenishment processes. Additionally, the communication between headquarters planning and store execution is of interest; as Ton (2002) found that there is often little understanding between them, which can lead to lower product availability. Also a higher inventory depth and SKU density lead to less

successful store execution. Decisions about these are usually made in headquarters though.

Technology is also affecting the in-store performance of replenishment operations (Raman et al., 2001). Labour processes can be driven by technological development and workers may be directed by technical devices. Particularly the recent development of information technology influenced the shape of current shop floor jobs. Information and communication systems widened the control of central functions. It allows headquarters and centralised functions to monitor operations more closely and make decisions at a higher and more qualified level (Seth and Randall, 2001). Nevertheless, centralised functions strongly rely on correctly maintained data to base their decision making on; and data inaccuracy is one of the major causes for OOS (Corsten and Gruen, 2003).

In decision making these systems might be often more trusted than the person on the shop floor who is facing the direct impact of the decision. Technological development in contemporary retailing is happening mostly in the area of data capturing and the processing of data into information to the right receivers rather than progress in mechanical processing of physical goods. The study will have to investigate what technology is actually used by the retailers and for which purposes (Raman et al., 2001). As the applier of technology might be different from the receiver of the benefits, it will also have to look at whether the usage is considered as being successful and how the application is perceived by the different players in the supply chain.

Despite technological development, retailing is still a service strongly relying on the people working in a store (Kotzab et al., 2007). Generally, human resource management has a huge impact on performance differences between stores (Human Synergistics Inc, 1986; FranklinCovey, 2006). However, human resources within a store can be used in different ways. Some job descriptions will consider the employee in a role of providing direct customer service by consulting the consumer, whilst other positions will be in logistics functions of sheer replenishment, or a mixture of both (Placzek, 2007). Ton's (2002) study

shows that inadequate time and attention to fill shelves results in lower availability. How shelf-filling and customer consulting are separated will therefore be of interest.

Depending on their customer involvement, retailers might consider different forms of training for their staff. In general there are two main streams in skilling employees. One sees a need for more skilling in general (Penn, 1995; Baxter, 2007; Beck and Peacock, 2007). The other only skills employees in higher positions, whilst replenishment workers will be employed as efficient as possible and portrays them more as a cost factor, leading to low job satisfaction and high labour turnover (Chartered Institute of Personnel and Development, 2008; Thonemann et al., 2005; Booth and Hamer, 2007). Hence, the study will have to investigate how the retailer understands the role of its people and their job descriptions. Further, it shall enquire about training of the workforce, the ratio of full-time and part-time employment and how staff is encouraged to perform well. FranklinCovey (2006) found certain management techniques in more successful retail stores. These stores managed their employees by using autonomy, accountability, clear measures, focus on few important goals and consistent communications. Hence, the upcoming of such points during interviews should be of interest. Ton (2002) also sees high labour turnover as a factor towards reduced availability, which is consistent with the finding of other studies that a longer stay within a position or organisation improves performance. Labour turnover rates shall therefore be probed for in the interviews.

The questions for the interview are framed by an introductory piece about the research project to relax the atmosphere, and questions about demographics were conducted at the end to finalise the interview. The demographic questions are not aimed at gathering statistical data, but were used to understand the background of the respondent and the interview situation.

### **4.1.3 Conclusion**

The interview guide is covering the most relevant topic areas arising from previous research and literature. The way questions are asked and in which sequence, is influenced by suggestions from literature about interview structures. Even though one tries to cover all aspects of interview guide development, it is necessary to test the interview guide. The proposed interview guide from this chapter is tested in a pilot study in chapter 4.2.

For the pilot study the preliminary interview guide is used to find out about potential weaknesses and amendments to be considered. It is not using participants from the main study, but a relevant test group to trial whether the interview guide actually fits the research questions and the proposed requirements. Based on the pilot study's results, the interview guide is then reviewed. The final interview guide, as it is later used in the main study, is provided in appendix I.

## **4.2 The Pilot Study**

A pilot study consisting of four semi-structured interviews was conducted prior to the main study. A pilot study can be described as trialling the interview. The results from the pilot interviews and the feedback from the participants shall be used to adjust the interview guide. Insights arising from the pilot interviews can relate to the length of the interview, the wording of questions, appropriateness of probes and prompts, and whether the responses are actually useable to answer the overall research question. Not only are the questions tested during a pilot study, but also the analysability of the upcoming responses (Gillham, 2000).

According to Gillham (2000) a pilot study should consist of at least two interviewees. Those are supposed to be representative of the group of potential research participants, but are actually not part of that group. They should have a similar background and provide a reality test for the proposed interviews.

Therefore, the pilot study participants do not belong to participating companies of the main study; but will be chosen amongst retail employees. As this research study is conducted in two different cultural areas, the pilot will consist of interviewees from both areas.

A qualitative approach is used in this study. The data analysis will therefore look at upcoming themes and proposed facts. As it also uses a social constructionist approach, the pilot study needs to establish whether the data, which is gathered through the interview guide, is actually analysable by the proposed method and whether it provides the required depth.

#### **4.2.1 Pilot Study Cases**

Matching Gillham's (2000) requirements, two pilot interviews in Germany and two in the United Kingdom were conducted for a total of four interviews. All pilot study participants have a background in retailing and work in stores at different hierarchical levels.

The two German interviews were conducted with store managers at their workplace. The two organisations were of different size and they are operating in different retail sectors.

One store belongs to a leading telecommunication retailer, with a nationwide network selling to consumers and small businesses. The other German store is part of a wholesale chain that serves plastering and painting businesses. This retailer is medium sized, the network of stores is focussing on a regional area and stores do not cover the area densely.

On the British side, two interviews were conducted with customer service assistants. Both of them are students working at grocery stores. One is working part-time throughout the entire year; the other one is working full-time. The number of working hours differed between them and also did the shop size. One was working for a convenience store format of a large chain, the other one



in a supermarket sized store of a premium retailer. Those two were interviewed at the researcher's home institution.

#### **4.2.2 Analysis of the Pilot Interviews**

The pilot study's analysis part will follow the Creswell (2007) framework as suggested in chapter 5.6. It will look at each case individually first. It starts describing the setting of the case and will then analyse each case separately for upcoming themes and for themes relating to the research question. Only afterwards will the cases be connected and the occurrence of themes in the various cases portrayed and analysed. The main focus will be on the analysis of the interview process itself to improve the interview guide for the final study. Hence, the analysis will look at response patterns; whether certain questions can contribute towards answering the research question; and whether interviewees can actually respond to questions.

However, in importance it has to step back behind the analysis process in the main study. Due to the small sample in a pilot study the Creswell (2007) scheme is not followed thoroughly through in terms of the data analysis. It is limited to providing the case context, describing the case and analysing each case within itself, as the focus is more on the interview process itself.

##### **4.2.2.1 The German Pilot Cases**

The first pilot interview was conducted with the 36 year old store manager of a German wholesaler in the plastering and painting business in August 2009. The interview took place at the store's break room. The manager also gave a tour around the sales area and the backroom and explained the store structure. The store is located in a commercial estate in an above average income town. The store manager enjoys a high level of freedom generally, but specifically regarding stock levels and the logistics support from his organisation. There is only very little control, as long as the sales numbers are satisfactory, visits from headquarters do not happen more often than every six weeks. Control is

executed by headquarters in the way that store managers have central meetings, where their stores performances are discussed. The amount of visits from headquarters increases with lower sales results.

The high level of freedom allows the store manager to treat his customers' orders and their needs individually. The store manager is very keen on delivering good customer service and satisfying his customers. The freedom given by his organisation allows him to do so. Nevertheless, the freedom can also be used to work around the organisation. It was told that the store used to open on Saturdays. Something the employees did not like, as they preferred spending the weekends with their families. As the sales figures were quite low on Saturdays, the store staff started booking Saturday orders into the system on the following Monday. Therefore the sales numbers became too low to justify opening at weekends from an economic perspective and the central organisation changed the store to only opening on workdays. This story shows how employees understand the system their organisation is working in, and how to use it to their own advantage. However, it might also be taken as an example for the reliance of the central organisation in numbers coming through the system.

The store manager describes the labour situation as long-term employment. All employees in the store are male, so almost all customers. Consequently, the employees in the store are usually the main earners of their family. They enjoy long-term employment and job security might be more of a concern to them than career progress. The store manager also describes the jobs as "*good jobs*", assuming that his employees like their jobs.

The second pilot interview took place at a branch of a major German mobile phone services and telecommunication services retailer. The interviewee was the 25 year old female store manager. She went through an apprenticeship in the same company straight after school and worked her way up to store management.

The organisation is highly centralised. The entire ordering process and most logistics processes are automated. The company is also very strict about following predetermined guidelines and procedures. The level of control through the central organisation is extremely high. Store employees are understood to be sales person, which is even specified in their employment contracts. All other activities are minimised to allow them spending their effort on sales. All employees' sales are measured and a significant part of the salary depends on the achieved sales figures. In rare cases employees could even be punished to pay back parts of their salary if their sales figures are too low.

With a high level of control, the system allows no individual change of the system. Any change of data has to be authorised through central operations. Even the store manager has to ask for permission from central operations to correct data like stock levels. The automated system needs accurate data in order to function and the procedures for interaction with the system show that the company tries to cut out human failure as much as possible by disallowing humans to interfere with the system. Generally, there seemed to be a very low level of trust in the front line staff by the central organisation. Nevertheless, the store manager did not perceive that strongly controlled system in a negative way; but much rather appreciated that it kept her mind free from reorder issues.

Autonomy for the store manager could be only found in the management of human resources in the store. The decision which employees should be trained and skilled in certain product areas was down to the store manager. She also announced the logistics specialist in her branch and could decide that this logistics manager gets lower sales targets than ordinary store employees. Overall, skilling and training plays an important part at the store. Employees spend several days a year on courses and most training is available via an online system. Also the company only employs staff that went through the own apprenticeship system. The fluctuation of staff is considered to be low, but that differs strongly between stores. The store manager is supposed to manage the team and to maintain motivation, ensuring that sales figures keep up to target.

There was very little action outside the system. The only sort of maverick behaviour happened in the store presentation. All stores nationwide have to follow a certain design and decoration scheme, which is installed by an external company. However, that concept is developed for a new type of store; whilst the investigated store is still set up for the old type. Hence, the decoration concept does not really fit the store and the store manager rearranges the decoration after the external decoration team leaves the store. That behaviour is strictly prohibited by the central organisation, but the store manager feels that the redecoration actually improves the store. Particularly as the central decoration concept disagrees with knowledge gained through her apprenticeship and courses in the company.

When it comes to product availability, the company does not actually own any product until it is sold. The aim was always to have 100% availability. The company does not have to be too concerned about the stock holding costs, as the major part of these costs occurs on the suppliers' side. However, the store manager was not aware of the entire issue of product availability in retail stores. A reason for that might be that store inventory levels were set by central operations. With the store's focus on sales, the matter of OSA was left outside the store's control and also off their mind.

#### **4.2.2.2 The British Pilot Cases**

The first pilot interview in the UK was conducted with a male customer service assistant (CSA) of about 30 years at a local grocery convenience store that belongs to a large national retail chain. The interviewee has an immigration background and works part-time next to his university studies. The job includes all sort of in-store activities like till work, replenishment and general customer service.

At a very early stage of the interview the CSA starts talking about permissions and authorisations in the store. It occurs that there are many tasks that can only be executed by a supervisor or at least under attendance of a supervisor. These

supervisors are some of the few full-time employed workers at the store. This system of authorisation is strictly followed and the CSA is for example not permitted to bin damaged products. Throughout the entire interview the CSA seems to speculate a lot about what employees with higher authorisation levels do and how the replenishment system works. It becomes obvious that his job is the execution of given tasks and the understanding of these tasks enjoys a rather low priority.

Nevertheless, the interviewee received two full days of training at the beginning of his employment. Most of this training was about legal issues and making the employee aware of the retailer's guidelines. The employee also keeps on receiving handouts from his employer, reminding him of rules and legal issues from his training. A real retraining or new training only takes place if an employee gets a different job in the organisation for which another authorisation is needed.

According to the CSA's description the delivery and replenishment process is pretty much the same every day and follows the same routine. Unsurprisingly, the CSA also describes working at his store as very boring. He usually asks his supervisor what to do and will then be given tasks for a short time. Even though the supervisors are in charge of the store, they are supported quite heavily through the IT system. Most the tasks that are passed on to the CSA are actually proposed by a computer, which the supervisors consult more or less frequently depending on their personal preference. Many daily routine tasks are related to data accuracy. The CSA has a high level of awareness that everything has to be scanned and that he is not permitted to execute some procedures without being double checked by a supervisor. The store checks the entire inventory on a daily base and also every delivery is double checked when unloaded. Overall, there appears to be a low level of trust in this retail organisation. Every step is monitored or double checked. Permissions and authorisations are needed for many tasks and processes and the shop floor workers are kept away from knowledge about the system and even further away from any interference with it. Even though the CSA consequently describes his

job as very boring, the workforce fluctuation is low. This is due to the economic situation in the area, where workers are happy to have an income. However, he assumes that basically everyone at the store would leave the job, if there were better opportunities for them. The employee fluctuation might therefore be lower than it would be in other areas of the UK. Some employees can be assumed staying on, although they dislike their jobs. A low job satisfaction is in this case not necessarily leading to a higher employee fluctuation due to the lack of alternative employment opportunities in the local area.

For the second pilot case in the UK a CSA from a national premium grocery retailer was interviewed. The person works in a supermarket size store that was sold from another premium grocery retailer to the current owner not too long ago. Therefore the interviewee worked for both retailers and makes many comparisons between the two.

In contrast to the other British interview, this CSA had quite a high level of knowledge about the store processes. The supervisors and managers in his new store explained tasks to him and how the CSA's actions actually affect the system and what causes certain actions have. At the same time the interviewee had a lot more trust into his new company than into the previous owner of the store, where store operations and work environment were less satisfactory.

The interviewee showed a very high level of job satisfaction and ownership for his position. The way of working was usually to get a certain task from a supervisor and then fulfilling this task independently. The replenishment employees enjoy a high level of autonomy and the organisation trusts the employees to a high level. The CSA is allowed to use handscanners and to interfere with the system. He can even correct inventory records. For such a high level of competence however, also a high level of skills is needed to enable employees to use technical devices and to understand the processes and the impact of their actions. The ownership can be particularly seen in the fact that the replenishment manager meets the replenishment team everyday and allocates certain aisles and tasks to individuals. As the person becomes more experienced and more knowledgeable in a certain product aisle, the

replenishment manager keeps on allocating the person to the same aisle. This way creates a feeling of ownership for “*my aisle*”.

As the CSA works for a premium retailer his job description does not only include the logistics part of replenishment, but also advising customers or assisting them. It can therefore be assumed that job satisfaction of its employees is important for this retail company in order to ensure that workers treat customers in a way that is expected by the customer.

#### **4.2.3 Learning from the Pilot Study**

The pilot study was conducted to test the interview guide and to improve the interview process; there are issues regarding the organisation and execution of the interviews that are worth mentioning.

There was additional value in conducting interviews at the participants' workplaces. Interviewees seemed to feel more comfortable and relaxed in their 'natural' role as retail employees. It also helped them to add comments to interview question and to demonstrate work flow processes to clarify arising unclear issues. Also, retailing often has a hands-on mentality; some participants appeared to find it easier to show certain circumstances rather than describing them abstractly. Furthermore, the time after the interview finished proved to be valuable. Participants added new and deeper information on the way out. This happened by showing the researcher around the backstore and explaining issues from their answers more detailed at the place where they usually happen. Also the bending of headquarter rules and the work around existing systems was only admitted after switching off the audio tape in two cases. The interview time after the 'official' interview does therefore contain valuable insights and should be taken into consideration in the analysis.

In one case the extra time summed up to about one quarter of the actual 'official' interview time. It can be concluded that retail employees are keen on telling their story; but for obvious reasons they might prefer talking about delicate issues only when the tape recorder is switched off and the atmosphere

relaxes. At this point at the end of the meeting, the level of trust can also be assumed being considerably higher than at the beginning, which makes it easier for the participants to express themselves freely. Consequently, the extended interview time should be considered in the analysis, even though it can only be based on the researcher's memory and notes.

The semi-structured interview format gave appropriate allowance for flexibility towards the participants' answers. Nevertheless, a few times a topic area had to be finished in order to get the interview completed in the targeted timeframe. The topic area differed between respondents. It proved difficult to assume whether a participant might answer more to one question or the other. Hence, looking back at the interviews the time allocation towards certain question areas could have been more optimal. Also, the researcher was getting more relaxed about the interview structure the more interviews were conducted, and the respondents should be given more room to dominate the time allocation towards questions in the main study.

Some of the academic retailing language was not understood by some of the participants. Again, that might derive from the hands-on mentality in retailing. But also the position of the participants and their career paths from the shop floor without previous academic education might be a reason of the vocabulary gap between the participants and the researcher. Store employees used a much more descriptive language, which was easy to understand and they had often not heard of the academic terminology. For the study it will be interesting to spot whether employees are familiar with 'official' words of the retail discipline. However, it has to be made sure that appropriate substitute words are on hand, so that participants are not feeling distanced due to the wording of a question. It is worth to aim for making the participant feel comfortable, which will help information sharing and the honest answering of the questions. Also the wording will differ between the hierarchical levels of the organisation; something that has to be taken into consideration when preparing for the individual interviews.



Even though the structure sometimes seemed not to fit the respondents perfectly, there is a trade-off against consistency across the interviews. In order to make interviews comparable within a case and across cases the interview structure cannot be loosened too far. The semi-structured approach appears to provide a good balance between the needs for getting deep answers from an individual's point of view on the one hand; and consistency on the other hand.

As expected from literature (Creswell, 2007; Gillham, 2000) participants were nervous at the beginning of the interview and most of them particularly looked at the audio recorder. This effect of the audio recorder disappeared within a few minutes and participants became more relaxed and open. The first question about the replenishment process itself proved to be quite good to overcome the initial nervousness, as it can be answered in a descriptive way. Employees are familiar with their everyday tasks and it is therefore less intruding. It also has to be mentioned that all participants in the pilot study were personally known to the researcher. Participants in the main study might be more closed and feel more critical about being recorded on audiotape, and being interviewed by a stranger.

Overall, the structure of topics in the interview guide was deemed to be satisfactory for the thesis investigation. All interviewees could respond to the entry question. Also, issues regarding availability and human resources arising from these processes were brought forward by the interviewees before the researcher would ask for them later in the interview. Initially, it was considered interviewing German store managers on the phone, due to the geographical distances. However, in the end two interviews were conducted personally in Germany. Upon reflection, it was very beneficial conducting the interviews at the stores. The store environment itself helped a lot to ease the situation for the participants, as they were at their home turf. It also made the interview more relevant, as the researcher could see the store and the building. That made it easier to understand the processes that were described during the interview.

Further, the store managers had the opportunity to show details of the branch and the store organisation. This made not only the understanding for the researcher easier, but it also made the describing easier for the store manager.

It also added to the data quality, as it was possible to check on whether participant and researcher both had the same understanding and interpretation of things. This adds to the validity of the research study. The only downside of conducting the interview in the stores, were the very few interruptions by customers and employees. Nevertheless, that made the interviews more real and helped to understand demands on the store manager.

Getting used to local accent was harder than initially anticipated. One case in particular included a lot of local language. And even though the interviewer was able to understand the local accent, it took longer than expected to get used to it. It also made the transcription process more difficult and more time had to be allocated towards it.

The major amendment for the main study was to give interviewees more freedom in answering questions on an extended basis. Regarding the researcher's personal behaviour during the interviews, it was realised that participants needed to be allowed more room for their answers. In the beginning the interview plan was quite strictly followed. As a consequence, the interview behaviour was planned to become more lenient towards the sequence, length and the way the interview is going. If interviewees want to talk a lot about a certain topic, there might be a deeper need for them to express their ideas about this particular area. Nevertheless, it will be ensured that all interviews roughly follow the same guide for comparability reasons.

It was also noticed that the length and intensity towards some questions differed strongly between participants. This can be caused by their position and they might have more or less knowledge in certain areas. The interview guide was written from an academic starting point. Hence, the language and sort of questions used at lower hierarchical levels should be reconsidered. The length of answers can also be influenced by the way of asking questions. Accordingly, focus shall be kept on starting with questions that motivate participants to tell and describe processes and situations. Only later, questions about opinions and judgements will be asked.

Further, few questions and probes were caused mostly by the researcher's personal interest and not necessarily by relevance towards the research question. Consequently, these situations are identified and the researcher became aware of the issue, which shall lead to a more reflexive behaviour during the future interviews and the avoidance of questions with little relevance.

The entrance question about the store replenishment processes really helped participants to find an easy start, ignoring the audio recorder and easing off the atmosphere. The question is also more on a content level and answers to this question will contribute to the extension of the Kotzab and Teller (2005) model about in-store logistics processes. The question about technology seemed to be negligible, as the participants came up with issues about technological systems and devices anyway when they were interviewed about the replenishment process. Hence, the question about technology can much rather be altered to a probe within the replenishment topic.

An area that was raised by the CSAs during the interviewees is job satisfaction. Job satisfaction can be assumed to be an important factor for service workers for delivering superior customer service. This area may be included more into the interview guideline, as it might be relevant what the different hierarchical levels think about the work environment in their retail stores. Job satisfaction may influence the fulfilment of in-store logistics processes. Also retail store shop floor jobs automatically include contact with customers, who will assumingly be influenced in their shopping behaviour by their experience and interaction with store employees.

Looking at the analysis of the interviews, it became clear that there are two levels of meaning in the interviews. There is a level of content and fact in the answers. And there is also a level of deeper meaning embedded in the language, behaviour and strategy of respondents' answers. Extracting and separating these two levels will be a challenging part of the analysis.

Having established and improved the interview guide in this chapter, the next chapter is going to look at the contexts of the main study's cases before the data analysis starts in chapter 6.

## **5. CASE CONTEXTS**

Following Creswell's (2007) framework, the first step in the data analysis is the presentation of the case context. As outlined in the unit of analysis chapter, the cases were set in two cultural areas. The selection of the UK and the German-speaking nations of Germany and Austria was on the one hand decided for practical considerations, but also because the retail characteristics are significantly different. The characteristics of those countries have to be considered during the data collection and even more throughout the data analysis. This chapter portrays those countries and highlights their differences and similarities. The brief general introduction of the countries is then followed by a comparison of their retail markets.

### **5.1 Country Presentations**

The study compares retail companies from the United Kingdom and the German speaking nations of Austria and Germany. Retailing in these countries follows different patterns, which can be found on the demand side as well as on the supply side of the business. Not only do the countries differ from each other, but also do they show some variety within themselves. General internal differences will be highlighted in this chapter. However, local focuses of participating retailers will be considered and presented in the analysis of the participants at a later stage. Even though Germany and Austria share a common language, a common history and can be assumed culturally very close to each other, the retail markets are often managed separately by companies. This is mostly due to the fact that they existed as two independent countries next to each other with border controls etc. between them. Although expanding into Austria appears to be a natural expansion plan for German retailers –with many players in the Austrian retail scene being of German origin– the expansion into the much larger German market is more difficult for Austrian retail companies, as the competition and price sensitivity in Germany is quite

tough and economies of scale are required to survive in this market (Burt et al., 2004).

On the same aspect one might wonder why Switzerland –as it is the third German speaking nation– is excluded from this study and not investigated together with Austria and Germany. The major reason for the exclusion of Switzerland is its political isolation within Europe. As Switzerland is not a member of the European Union, it does in fact not belong to a wider European retail market, in which Austria, Germany and the United Kingdom participate. Switzerland protects its agricultural market and imposes customs on imported goods. Furthermore, planning restrictions make it easy to keep foreign competitors out of the country (Morschett et al, 2009). Even though Switzerland and the European Union keep on reducing the trade barriers between them; the Swiss retail market shows significantly different prerequisites and market conditions, and is therefore not considered in this research project.

### **5.1.1 Austria**

With 84,000 km<sup>2</sup> and 8.3 million inhabitants Austria belongs to the smaller countries within the European Union. The population structure within the country is quite diverse due to strong geographical contrasts. In Vienna, the capital of the Austrian Republic, live about 1.7 million citizens. It is the major metropolitan area in Austria and it is densely populated with an average of 4,000 inhabitants per km<sup>2</sup>; the national average being 99 inhabitants per km<sup>2</sup>. The gross domestic product (GDP) per inhabitant is significantly higher in Vienna with €41,500 compared to the national average of €30,078. The second place in GDP terms is Salzburg showing an average of €34,800. Consequently the number of retail stores is also higher in Vienna than in other regions (Statistik Austria, 2008). Overall, the regional differences mean different challenges for retail companies on the demand and the supply side.

Retailing is the largest economic sector in Austria in sales terms. It is also the second largest private employment sector with about 561,000 employees

(Handelsverband, 2009). According to Nielsen (2008) the number of stores is in constant decline of approximately -2% over the last years, whilst sales are developing positively with growth rates of around 4% in 2007 and 2008. Retail concentration in Austria increased to the point where the two largest players in the grocery sector, the German REWE group and the Austrian SPAR, hold 58.6% of the entire market. Together with the third largest grocery retailer, the hard discount store Hofer, which is a part of the German ALDI Süd, they achieve 78.5%. The remaining retailers gain five per cent or less market share each, most of them being characterised by a declining share of the grocery market. Retail companies own labels are increasing as well and represent a share of 28%.

Due to planning restrictions the hypermarket format enjoys only a relatively small share of 9% of all sales, the strongest format being supermarkets between 400 and 999 m<sup>2</sup> with 64% of all grocery sales (Hoffmann and Schnedlitz 2008). In European comparison, Austrian consumers shop relatively frequently with 14 shops per month. That might be encouraged by the high number of 6,000 stores and 3,100,000 m<sup>2</sup> of sales space (Nielsen, 2008).

Austrian consumers are generally becoming keener on pleasure and experience when shopping. They are increasingly well informed and educated, and they are also more time-constrained and are aiming for a lifestyle of health and sustainability (Hoffmann and Schnedlitz, 2008).

### **5.1.2 Germany**

Sharing a border with Austria, Germany is situated north of Austria and is often considered being Austria's 'bigger brother'. Germany has 82 million inhabitants in a state territory of 350,000 km<sup>2</sup>. Both countries share a common language, a common history and a similar culture. Whilst Austria is predominantly Catholic, Germany is divided into majorly Catholic states in the South, and predominantly Protestant states in the North. The cultural similarity is very high between the Southern German states and Austria, but at the same time it differs to the

Northern German states and particularly to the previous Prussian culture (Datamonitor, 2009b; Datamonitor, 2009c; Statistisches Bundesamt, 2009).

Despite their commonalities the two retail markets shall be portrayed individually, as the countries are often managed separately by retailers and the retail markets show differences particularly on the demand side.

With 230 inhabitants per km<sup>2</sup> Germany is generally denser populated than Austria. However, the population density varies within the country itself. The capital Berlin has 3,834 inhabitants per km<sup>2</sup>, whilst Mecklenburg-Vorpommern is sparsely populated with 72 inhabitants per km<sup>2</sup>. The majority of the population is living in the West and the South, Berlin as the Capital being the exception (Statistisches Bundesamt, 2009). The national average GDP per inhabitant is €30,300, but it differs widely between wealthy areas such as Hamburg and Frankfurt and some of the deprived areas in the Eastern German states (Eurostat, 2009a).

Similar to the development in Austria the number of shops is declining, whilst sales are increasing. However, the sales increase in the German grocery sector is low with only 0.7% in 2006. Even though the German grocery retail sector shows a tendency towards concentration too, it is less concentrated than the Austrian market. In terms of food sales in Germany itself, EDEKA and REWE, which are both cooperatively organised, have the highest shares, followed by the retail brands of the stock exchange listed Metro Group. As a German phenomenon hard discount stores are very strong. ALDI and LIDL hold about a third of the market (KPMG, 2006; Colla, 2004; Datamonitor, 2009a). Together the top five retailers hold 70% of the food and near-food market. German consumers are among the most price-sensitive in Europe. The originating and the success of hard discount stores here is therefore not surprising (Nielsen 2006; Nielsen 2008). Today hard discount stores stand for 40% of food sales in Germany (Zentes and Rittinger, 2009).

Competition in the German retail market is fierce. Despite the already lower margins compared to other markets, the retail space is actually increasing



(Nielsen, 2006; Colla, 2004). In fact the retail space per consumer in Germany is already twice the existing retail space per consumer in the UK (Koch and Friese, 2005).

About 2.7 million people work in the German retail industry, with about half the people working part-time (Statistisches Bundesamt, 2009). The sales share of hypermarkets is at about a quarter of total sales. The largest share of sales belongs to supermarkets between 400 m<sup>2</sup> and 999 m<sup>2</sup> (Nielsen, 2006). But this supermarket format is on the decline against larger formats and discount stores.

### 5.1.3 United Kingdom

The UK has 61 million inhabitants living on 244,820 km<sup>2</sup>. With 249 inhabitants per km<sup>2</sup> it is therefore the most densely populated country of the study. However, that differs extremely between regions of the country. The heavily populated capital of London has 4,800 inhabitants per km<sup>2</sup> and the Scottish Highlands are only populated by 8.2 inhabitants per km<sup>2</sup> (Office for National Statistics, 2009; Highland Council, 2009). The GDP per inhabitant is €29,700. The GDP also differs widely between the affluent South and economically challenged areas in the North (Datamonitor, 2009d; Eurostat, 2009a).

The British retail sector employs more than 3 million people; the majority of them in part-time employments (Burt and Sparks, 2003a). The largest retail company Tesco employed 364,000 people in 2009; about two-thirds of the size of the entire Austrian retail workforce. The four largest British grocery retailers share about two-thirds of all grocery sales between them and the concentration is growing (Competition Commission, 2008); for example the fourth biggest retailer –the cooperative group– is taking over number five Somerfield. However, due to the already high retail power concentration in some areas, the Office of Fair Trading forces the merged companies to sell more than a hundred stores to competitors (TalkingRetail, 2009).

As in the other countries the number of stores in the United Kingdom is declining. Due to a liberal political attitude towards retailing, large store formats

are developing strongly (Colla, 2004; Shaw and Dawson, 1996). Hypermarkets and superstores stand for 55% of all grocery sales. At the same time the market share of 16% for small stores represent the demand for a convenience store or local store segment. It is the medium sized supermarkets in between that are significantly less strong in terms of grocery sales compared to Germany and Austria. Consequently, there is less retail space and a lower number of stores in the UK than in the other countries (Nielsen, 2008; Metro Group, 2009).

#### **5.1.4 Retail Sector Comparison**

Comparing the three countries of the study: Austria, Germany and the United Kingdom; they are all saturated retail markets. As a consequence of that saturation, retail concentration took place, expansion into new product categories and other retail markets happened and thus competition also increased (Colla, 2004; Dawson, 2000).

The furthest concentration in the retail sector happened in Austria, where the top three grocery retailers achieve nearly 80% of sales. Followed by the UK, where the top four holds two-thirds; and Germany where the top five achieves 60% (Metro Group, 2009; Competition Commission, 2008; Hoffmann and Schnedlitz, 2008).

The expansion into new product categories is most developed in the United Kingdom, the legal acceptance of large store formats might have been an enhancer of that development. Germany and particularly Austria have legal restrictions and use local planning regulations to protect medium and smaller sized stores. Therefore the number of stores is a lot lower in the UK than in the German speaking countries and the market share of hypermarkets and superstores is much higher in the UK (Nielsen, 2008; Metro Group, 2009; Kumar, 2008).

The UK also shows the most liberal opening times, with the opportunity to open non-stop. Austria is much more restricted where stores have to close at night time at work days; from late evening on Saturdays and on Sundays shops are

generally closed. Germany left much of the opening times regulation to the 16 federal states. Commonly shops would close at night time and on Sundays (Metro Group, 2009). Also labour unions in Austria and Germany are much stronger than in the United Kingdom. A widening of opening times is therefore often not used by retailers, as the higher wages make it less attractive to open at inconvenient times. As another difference UK retailers use night replenishment shifts, something that is rather unheard of in Germany and Austria. Again this might be caused by stronger labour unions; but also by the much larger retail space in Germany and Austria, which makes replenishment throughout the day easier and less interfering for customers (Metro Group, 2009).

Profitability in the German and Austrian retail sector are also much lower than in the UK. Austrian retailers achieve on average 2.2% sales profitability, Germany's retailers operate with even less and UK grocery retailers achieve about 5% profit margin (KMU Austria, 2008; Koch and Friese, 2005; Competition Commission, 2008).

Due to the saturation in their home markets most retailers expanded internationally (Dawson, 2000). Retailers like the German Metro make even most of their sales and profits abroad. Also Britain's largest retailer Tesco, where every 7<sup>th</sup> pound in UK retailing is being spent, expanded. Nevertheless, it did not enter the low margin German market. On the contrary, the German hard discount stores moved into almost every European market. The world's largest retailer Wal-Mart bought ASDA in the UK and made it to the second largest grocery retailer. However, Wal-Mart failed heavily in the German market, where it tried to enter under its own brand and organisation. Austria's retailers focus their expansion more towards Eastern Europe and the countries of the previous Austrian empire. They grow steadily and keep on expanding successfully into these new markets.

Austrian consumers spend €5,952 per year on consumer goods; Britons spend on average €5,621 and Germans spend significantly less with €4,283 (Metro Group, 2009). Competition in Germany is mostly price driven and hard

discount stores hold a large proportion of the market; whilst they only achieve minor market shares in the UK (Colla, 2004). Fernie et al. (2003) describe price as the major marketing tool in Germany. And according to Zentes and Rittinger (2009), Germans are much more price oriented than British consumers, who require higher quality and better service.

### **5.1.5 Conclusion**

Altogether the retail markets in the investigated areas are highly concentrated to a point that is even leading to observation through competition authorities. With the existence of large retail companies, a high level of organisation and professionalization can be assumed. The way companies in those areas organise their store logistics processes will therefore be highly interesting. Also the differences in the shopping behaviour on the demand side have to be considered when analysing the processes on the supply side. The characteristics presented in this chapter will be used throughout the entire analysis chapter, within cases and even further across cases.

## **5.2 Sampling**

As outlined in chapter 3.4, the study follows a case study framework recommended by Ellram (2002). Although Ellram looks on case studies with a positivistic tendency, which does not match this study's qualitative methodological approach entirely, this study tries to follow her framework to an extent that is compatible with the study's methodological stand. Despite the qualitative character of this research, the study wants to match traditional quality aspects if possible and when they are not contradicting the chosen methodology and method.

To cover Ellram's (2002) requirements for multiple case studies, six retail companies in two different cultural areas were chosen for this study. This is quite a large sample for a qualitative study. Especially considering that five interviews are conducted within each case to cover the different hierarchical

levels in the organisation and the differences that occur within an organisation. However, each interview will be scheduled for not more than forty-five minutes. Adding the introduction and goodbye phase, that sums up to an hour of interview time. This time frame is dominated by practical considerations. It is assumed that one hour is about the maximum interview time a researcher can ask for in the busy environment of retail companies and stores.

The sampling requires choices to be made for retail companies and for choices for interview partners within the organisation itself.

The retail companies were selected for the product sector they are operating in and for their significant size. The selection of different product segments does not only fulfil the research method's requirement of covering a wide research area (Kelle and Kluge, 1999). It also follows suggestions from authors such as Grant and Fernie (2008) to explore the wider research environment and not stopping within the grocery sector.

In logistical terms one can assume that with increasing size of a retailer, the complexity of logistics operations increases too. Highly organised and specialised logistics operations within the retailers are needed for this study, as it investigates the interaction between humans and those systems. Therefore only chain operators with a significant number of stores were chosen, as they can be assumed to have specialised systems and processes in place for their supply chain operations. Table 5 gives an overview of the retailers that were used in the main study's sample. A more detailed table –including more characteristics of the companies– is provided in Table 7 in the cross-case analysis.

**Table 5 Sampling Overview**

	<b>Case 1</b>	<b>Case 2</b>	<b>Case 3</b>	<b>Case 4</b>	<b>Case 5</b>	<b>Case 6</b>
<b>Country</b>	Austria	Austria	Germany	UK	UK	UK
<b>Sector</b>	Grocery/Hypermarket	DIY	Grocery/Hypermarket	Fashion	Grocery/Convenience	Department Store
<b>Number of Stores</b>	~100	~65	~300	~60	~3000	~650

Although the approached retailers were selected according to their characteristics, the researcher's influence on the selection of interviewees at the individual retailers is relatively small. Access to retail companies is negotiated with the central organisation, as high level permissions are needed to conduct a research project in a business organisation. Therefore the organisation is usually scheduling the interview appointments, which leaves the researcher little room to request certain stores or persons. However, the participating organisations are assumed to present themselves in a way that reflects their organisation and gives the researcher an idea about the variety within the organisation. As the companies remain anonymous, there is no need to impress the researcher. With their participation the organisations show that they are interested in the issue of on-shelf availability. Thus, they are eager to gain more insight into this topic. Sharing problems with the researcher gives them the chance to discuss their challenges and to improve. Additionally, the retail sector has a tradition for frank behaviour and hands-on mentality. Consequently, the hiding of problems and self-glorification, and a resulting non-representative sample, is not considered of being a major threat. Nevertheless, if such behaviour is experienced, it adds to the way an organisation and its people behave and would therefore be a valuable insight and a feature that enriches the interpretation of the case.

The selected cases and their characteristics are presented together in each single case analysis. Sometimes the case presentation cannot go into too much

detail, as all participants were guaranteed strict anonymity. Any information revealing the participants is therefore excluded.

Having introduced the retail markets relevant to this study and the considerations towards the sampling, this chapter provided the surrounding context of the cases. The subsequent chapter is now going to deal with the data analysis itself and is followed by the conclusions of the thesis.

## **6. DATA ANALYSIS**

The data analysis is structured in three main sections: the within-case analysis, the cross-case analysis and the typologies extraction.

The within-case analysis section presents the results from the individual cases that are relevant to answer the research question. The cross-case analysis section summarises the results from the cases, discovers similarities and differences, and analyses them. The within-case analysis section acts as the link between the analysis process and the discussion of its results, ensuring the trackability of the research results. The cross-case analysis section focuses on the comparison of the within-case analyses and the settings. They both concentrate on the data in the analysis process to reduce the axiological threat of a bias incurring from extant literature. The connection with the body of knowledge (i.e. the theoretical literature base) is made in the extraction of the typologies in section 6.3, where the results from the within-case and cross-case analyses are set in context with literature and discussed.

Every retailer had its unique setting, which requires analysing the data on a case by case base. Furthermore, an important quality measure for qualitative research is the trackability of the results. Presenting all cases at the same time would lead to drowning in the data and to lose the particular value of each individual case. Therefore, the case analyses are firstly presented individually, before the results are compared across the cases. Deriving from these two steps, the typology extracts a generalisation of the analyses results.

### **6.1 Within-Case Analysis**

As the first step in the data analysis, the rephrasing step –as described in chapter 3.4– was applied to the interview transcripts. Usually the documentary method identifies only the paragraphs that are interesting in regards to the research topic and leaves out the rest. The documentary method was originally



developed in a study that used open biographical interviews. With the usage of a semi-structured interview approach, there will be only very few non relevant parts, as the interview topics were given by the researcher, who chose those topics because of their relevance towards the research question (Nohl, 2006). Even though the non relevant parts were few, the analysis in this study also focused on the useable paragraphs and ignored less relevant parts of the interview.

In general, the focus was on content during the rephrasing interpretation. The discourse and the importance of the narrative structure were in the focus of attention at the reflective interpretation. With the focus being on content and facts in this part of the analysis, also those answers were of interest that do not necessarily show story-telling characteristics. The interview guide was based on the topic areas: replenishment operations, product availability and personnel. Hence, the rephrasing interpretation followed this structure. The issue of response topics therefore has to be seen in context with the interview guide. The original documentary method is based on very open bibliographic interviews where the participants were given much more room for their individual answering structure. In the semi-structured interviews that this study used –for reasons outlined in the interview guide development in chapter 4– the respondents can answer freely in a set topic frame. Also the time given to build up trust was shorter than in the original setting of the documentary method (Bohnsack, 1989) and answers were accordingly shorter. In their responses participants often added a fourth category to the structure, which was the room for additional comments. These post-interview guide responses were taken into account in the topic area where they belonged. Therefore topic areas were opened again after the section was already dealt with. Hence, quotations and references were taken from different chronological parts of the interview, as they belonged to the same topic area. Only in the reflective interpretation it will be of importance where those points arose. For the rephrasing interpretation this consideration was not made.

The reflective analysis refers to the original interviews and the results from the rephrased interpretation. As the rephrasing interpretation had the purpose of distancing the researcher from the raw data and enabling the access to an objective set of data, this part avoided interpretations that could “contaminate” the data with subjective interpretations by the researcher. This avoidance will be given up at the reflective interpretation, where the researcher’s background and observations will contribute to the interpretations and discussions of the interview.

The fact that the research project took place in two linguistic areas made the usage of a text based analysis method particularly challenging. So far the application of the documentary method could only be found in monolingual studies. The usage of two languages required translational efforts. When translating text for this research study, the researcher had to be particularly careful not to change the meaning. As the study was based on a social constructionist perspective, it is implied that content and discourse are used differently. This is particularly strong in this cross-border study, where language and culture set a certain context for things that are said during the interviews. It was therefore decided to perform the analysis in the language the interview was conducted in and to present the results in English. Text fragments that are shown in the analysis and that are used to prove points will be made available in English as well. Nevertheless, the analysis work of the German interviews was undertaken in German and only the results are provided in English in order to avoid a translation impact on the study and to minimise the influence of the multilingual and multicultural character of the study onto the results.

For structuring purposes the cases are numbered one to six. Cases one to three are the German-speaking retailers; four to six are English-speaking. The interviews are labelled with three digits, the first digit representing the retailer, the second for the store and the third for the hierarchical position (1=central management; 2=store management; 3=store employee). At retailer three, several interviewees were conducted with shop floor employees. To differentiate these, an extra digit is added in brackets. An illustration of the

interview numbering is provided in Table 6, with the case being coloured blue, store or central function in red, and the interviewee's hierarchical level in green.

**Table 6 Interview Numbering Overview**

	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
HQ	1-0-1	2-0-1	-	4-0-1	5-0-1	6-0-1
Store 1	1-1-2 1-1-3	2-1-2 2-1-3	3-1-2 3-1-3(1) 3-1-3(2) 3-1-3(3)	4-1-2 4-1-3	5-1-2	6-1-2
Store 2	1-2-2 1-2-3	2-2-2 2-2-3	3-2-2 3-2-3(1) 3-2-3(2) 3-2-3(3)	4-2-2 4-2-3	5-2-2	6-2-2 6-2-3

For example the interview with the CSA at the first store of the Austrian DIY retailer is referenced as retailer - store - interviewee: 2-1-3. Unless otherwise stated, the line numbers refer to the transcript of the original interview and not to analysis steps in between.

The within-case analysis of each case starts with the description of the retail company, the data collection and the interview conduction. Then a summary of the rephrasing and the reflective interpretation of the case are provided.

These summaries present the responses split into the interview guide's topics of replenishment process, availability and human resources. It will give an understanding of the processes within the retailer. However, further analysis about the differences and similarities within individual answers use the full rephrased interpretation and the original interview transcripts as a data base.

### **6.1.1 Case #1**

#### **6.1.1.1 Case Presentation**

The first case is a major player in Austrian grocery retailing. The company runs several hundred stores of different shop formats from neighbourhood convenience type stores to large hypermarkets. However, the study only focuses on the hypermarkets of which there are around one hundred spread all over the country. Most the deliveries come from the own central DC. Only local fresh products such as bread are delivered by the suppliers directly. Deliveries come in everyday from Monday till Friday. The stores close over night and on Sundays.

Originally it was intended to interview shelf carers/CSAs (*“Regalbetreuer”*) from a lower hierarchical level than the team leader. However, the store managers disagreed with that, as they felt those staff would feel too intimidated to contribute to the research. It has to be mentioned that Austria has a particularly strong social appreciation for academic degrees and a relatively small proportion of the population holds a university degree (Eurostat, 2009b). Therefore the social gap between a CSA and a university researcher was perceived as extremely large. Even the team leaders were shy participating in the interviews. This resulted in significantly shorter interview responses and more closed responses. Also the way the interviews were set up contributed to this shyness. The interviews were organised through the CEO office and employee were told to support this research project. Employees were informed about this through the company’s regular communication channels. Consequently, employees knew that the CEO office wants that research to be supported; which can be translated into the maximum hierarchical spread within the company. Luckily, the store managers and the regional director were more confident in their responses, and the interviews exceeded the scheduled timeframe in all cases due to the long and wide responses given by the interviewees. These participants have a stronger stand in the organisation. Additionally, their knowledge level about processes and other areas than their

own in the organisation is higher. Some of them also received further or higher education and their position within the organisation may also lead to a higher self-confidence during the interview. Those participants were very interested in the interview questions. In most cases they were even surprised that the scheduled interview timeframe was over.

The interviews were conducted in the run up to Christmas 2009; the busiest periods for this retailer. Nevertheless, participants allocated their time generously to the interviews and there was no time pressure to finish. There were few interruptions, as the regular store operations were going on at the same time, but participants minimised these interruptions.

#### **6.1.1.1.1 Store 1**

The first store of this retailer was situated at a shopping centre in a residential area in Vienna. It employs around 120 people, 85 of them in full-time contracts. The selling space was about 4,000 m<sup>2</sup>; the back store consists of 400 m<sup>2</sup> which was mostly occupied with racking and also chilled storages. Two interviews were conducted at this store: One with the store manager and one with two team leaders. The store manager was end forties. His career started originally at a premium retailer, from which he changed to another hypermarket retailer and then eventually to his current position.

The store manager was very inviting. He was told by the CEO office about the research, but not about the content of it. The store manager did not give a tour around the store. This was done by the team leaders after they had been interviewed. However, the researcher walked around the mall and the store before the interview to get an impression of the store.

The team leaders were in their late forties. They both came to their current positions from a non retailing background. One started working part-time after a maternal leave and then stayed on at the retailer. She was employed with the retailer for twelve years and was the deputy store manager at the time of the time, being responsible for the operational side of shelf replenishment on the

shop floor. The other team leader was responsible for the wine department. He was previously self-employed in a restaurant before. The deputy store manager was interrupted by several phone calls during the interview. Only shortly before the interview they were called by the store manager into his office to participate in the study. The introduction time was therefore very short and the level of trust between researcher and participants can be considered as having been lower than during the store manager's interview.

#### **6.1.1.1.2 Store 2**

The second store was in a shopping mall in a residential area of Vienna. However, due to being placed in a shopping complex most customers did not come from the immediate neighbourhood. The selling space was 5,600 m<sup>2</sup> and the backstore consisted of 1,800 m<sup>2</sup>. The storage area and unloading bay was located one level underneath the store itself. Only the chilled and the frozen storage were on the same level as the sales area. All goods had to be transported by an elevator to the shelves. It also physically separated the workers in logistics functions from the rest of the workforce. One hundred and eleven people were employed at the store, fifty-five of them in full-time contracts.

The store also had an in-store bakery that was managed by the store. It had its own baker, who was in charge of running the bakery. However, regarding performance and management the store was considered as being part of the store, even though it was situated after the tills in the main shopping mall. Logistically that bakery was supplied through the store. At the same time that bakery supplied the bakery department that was inside the store area. From a customer perspective it was difficult to recognise them as belonging to the same company, but they were run through one supply chain.

Two interviews were conducted at this store; one with the store manager and one with the team leader for dry goods. Again the store was informed about the research project by the CEO office. The difference in education levels added some insecurity and were probably also related to the hands-on mentality in

retailing. At the end of the interview with the store manager, the researcher was actually told that he is *“alright for someone who went to university”*.

The interview started with a tour around the store and the storage area. The store manager frequently spoke to her employees that we met on the tour and helped disoriented customers. Also when she spotted something wrong, she would correct it or even pick up litter. The store manager was in her mid fifties. Her career path was that she worked for this retailer for decades and started working there from the beginning of her professional life on. She started as an apprentice and then worked her way up. She worked at the same store since the beginning of her career. Even after an extended tour around the store, the interview took about an hour time. The second interview was with the team leader for dry goods. She only finished her apprenticeship at the store a few years ago and was on an external qualification course for a store manager career. She knew in advance about being interviewed. However, as the store manager herself did the tour around the store, there was very little introduction time and the participant was very intimidated, which resulted in closed answers and a short interview time.

#### **6.1.1.1.3 Central Function**

The setting up of the interview with a person from central functions was the most difficult one to arrange at retailer 1. The person was identified as being relevant or in charge of shelf availability by the CEO office. The interview partner was the regional director for the Vienna region, whose office was located in a mall building that included a store of the retail chain. However, no research was conducted in that store, as the proximity to the regional head office could have led to bias in interview responses.

The Austrian headquarter had no person directly in charge of store operations; only for things that affect store operations, e.g. construction, distribution; but not for overall store operations. This responsibility belonged to the regional director. The regional director was fifty years old. He started his career as a trainee at the company after he quit university and worked his way through several levels

of store operations. He had triggered an internal monitoring project for on-shelf availability in the past. That might have been a reason for his interest in the topic and resulted in a long interview time of more than an hour.

#### **6.1.1.2 Rephrasing Interpretation**

##### **6.1.1.2.1 Replenishment Process**

Products at the stores arrived at different times throughout the day. They were delivered from two DCs. One DC delivered fast moving goods every working day; the other delivered slow movers every second working day. Perishables were brought in by the retailer's own delivery and also by suppliers every day in the morning at store opening days, which was Monday till Saturday.

Arriving regular deliveries were supposed to go straight to the shelves; only chilled products should be stored in temperature controlled warehouses. Products were expected to fit mainly into the shelves, only very well selling products had to be put into the backstore and replenished throughout the day. Usually the shelf space was the only storage place for most dry goods.

The way promotion goods deliveries were handled differed between the stores depending on the available storage space. Store 1 exchanged old promotions with new ones, once they were delivered. Promotion goods for further replenishment were kept in the backstore. Depending on the amount, regularly listed left-over goods from promotions were either put on the shelf or in the backstore. Store 2 usually received promotions a few days before they were started, as the store had a considerably large backstore. Also store 2 ordered much larger quantities of regularly listed products when they were on promotion. After the promotion was over, the goods were replenished into the regular shelf; but due to the lower promotion buying price, the profit margin increased. Promotional products were also particularly often not deliverable (1-0-1; 1-2-2). Blamed for this were incorrect forecasting and supplier problems.



Regarding the way products arrived on trolleys the two stores' responses did not agree with each other. Store 1 received products packed according to categories. This did not always work perfectly, but the DC operations increased significantly over the current past. Store 2 had to assort the delivered products according to the categories itself. This was done roughly by the backstore logisticians and then further assorted for the specific aisles by the department leaders.

The deliveries were supposed to arrive at certain time slots during the day. For those times more staff was scheduled in the work plan to cope with the arrival and the according replenishment activities. Those time slots were often not matched. According to interview 1-1-2, only about 90% of deliveries arrived at the dedicated time slot. This led to inefficiencies in the work agenda and a delay of replenishment.

The reordering of regular products was based on a computer system that used POS data to calculate the need for new deliveries. The system also took past sales data and patterns into consideration. The order lead time was that a product sold on Monday was delivered on Wednesday. The Wednesday delivery could be adjusted until Tuesday store closing time though. The interviewees expressed different views on how much employees had to change orders to get them right. Store 1 saw a need to change them often, whilst store 2 only corrected inaccurate stock records and adjusted orders if a product was selling very well. Only for perishable products the ordering did still mainly rely on the shop employees.

The ordering for promotions happened differently from regular ordering. One month in advance of the promotion the store had to order. The system or the headquarters would suggest an amount to be taken by the store. This amount could be increased by the store, for a reduction of the amount the store needed to provide a reason. Some promotions had fixed amounts though, for example when every store received one palette of the good. Eventually, central decisions would have priority over the store's wishes. That was necessary, as the store could not understand all reasons for the central buying decisions.

The way products were returned depended on the supplier and the reason for the return. Products that passed the expiry date were disposed at the store. Generally, products that came close to crossing the expiry date were reduced in price to be sold before they expired. Broken products were sent back through the forward supply chain. The store had to contact the DC before the return to retrieve a code to be put on the goods. Also some suppliers preferred the retailer to dispose faulty products instead of reversing them.

#### **6.1.1.2.2 Availability**

OOS were not measured or routinely searched for at the retailer. The way of detecting OOS was optically during the replenishment or that an employee noticed a shelf gap accidentally. OOS should not occur, as the automated ordering system always ordered the required product to fill up the shelf. The accuracy of stock records on the system was therefore important. A systematic point of detecting OOS was the check of stock records of products with negative stock on the system. As negative stock is impossible, those inventory records must be inaccurate and therefore corrected by employees. The company ran a pilot OSA study, in which an external agency recorded shelf gaps. However, that pilot was over and so far no OSA measurement system was installed. Also suppliers irregularly recorded OOS. As a follow up for the pilot, for a certain time period one department was chosen to get OSA measured by store employees; the OSA numbers usually improved. Then another department was chosen, and so on. Those numbers were then sent to the local office of the retailer. One store manager saw this as an *“internal competition”*; whilst the other store manager did not even know about this scheme. A routine to prevent OOS was mainly seen in maintaining the automated ordering system. This was done by checking inventory records. The computer system suggested which products needed checking; some products were high priority products and always checked. But with 60,000 SKUs a frequent check of all products was impossible. Also the automated ordering system needed corrections, for example when higher demand could be expected due to a price reduction or to increase orders for the weekend. Apart from perishables no products were delivered on Saturdays, which had to be considered for the ordering.

OOS was usually detected optically by the shop floor employees. Store two had a routine of arranging the product facings during the last half an hour of store opening each day. Even though this was intended to make the store look tidier, it also resulted in making the identification of shelf gaps much easier. Further, department leaders would usually walk through their department in the early morning to look what needed to be done and would notice OOS at that time. When they noticed an empty shelf they needed to check the system on the handheld scanner. There were only three potential responses: the scanner would indicate that a product is not deliverable, the shelf plan was changed, or the stock record was incorrect. In case there was stock on the system, the employee would have to search at the backstore for it. If it could not be found the stock record had to be changed. If an incorrect stock record remained unnoticed, OOS could last for weeks. It was experience and training by the department leaders that made employees know how to respond to an empty shelf. Inexperienced workers were more likely to get it wrong.

Generally, no OSA performance numbers were fed back to store managers or shop floor workers.

The reasons for OOS were identified inside and outside the retail organisation. Internal reasons could be inaccurate stock records, a redesigned shelf plan, delisting of products without notifying the store, the large number of SKUs in combination with a small backstore and bulk buying by customers. But also manufacturers were blamed for non-deliverable products, product and packaging changes and not shelf-ready packaging.

Store execution faced challenges from the fact that every store was different and even the shelf systems were different in stores. Therefore, common shelf plans were impossible. Stores were getting busier and promotion cycles shortened, consequently it became more difficult to make people aware of OSA. Planners did not talk enough with practitioners which made handling at some stores unnecessary complicated. The large range of products made it impossible to stock all products deep enough to ensure availability at all times.

Store two also had a bakery that was based after the cash tills. This bakery also supplied the bakery department in the store with goods. The OSA of the bakery was managed independently by the baker. Some products needed several hours to be baked and the baker had to look ahead for this time. Also products had to be disposed at the end of the day. The bakery only ensured the availability of key products during the last opening hour. The plan was to educate customers that OSA was lower during the last hour to encourage them to shop earlier. If customers knew that all products were available up to the last minute, they would shop late.

#### **6.1.1.2.3 Human Resources**

For every store a labour budget was negotiated between the store manager and the area management. The plan looked at the number of workers at each department. Store employees were usually allocated to a certain department. Each department was looked at from a turnover per working hour perspective. A successful department may justify extra employees that other stores do not have. Turnover per working hours did not express the meeting of financial targets, because the cost structure of a department depended on the age of the employees. Also, every store had individual challenges, for example long replenishment ways or customers not returning shopping carts.

The payment of workers was regulated through a collective agreement with the labour unions. The wage depended on the level of responsibility, age and other criteria. The stores could employ people full-time, part-time or chose external agencies. It was entirely the store managers' decision within the negotiated budget. There was a tendency to reduce the number of full-time employees. Only leading positions remained full-time positions and the rest was filled with part-time workers and external labourers. One store manager however opposed this trend, because external agency workers did not identify with the company and changing workers required new training. He used them only to cope with seasonal peaks. The service level was seen to be threatened by using external

agency workers. Generally, the number of workers was reduced and therefore the labour output and quality of each individual worker needed to be increased.

Low wages and inconvenient working hours made it difficult to recruit new employees. As flexibility was requested from all employees and public child care facilities opened shorter than the stores, many females could not be employed by the stores. The stores had no formal qualification requirements towards applicants for customer service positions. The most important criterion was experience and the personal impression of the store manager during a job interview. Many people came from non-traditional career paths. Store manager and department leaders selected store employees. The fluctuation of employees varied strongly between the stores. The major factor for a low fluctuation was a good work environment, which was also needed to receive the full potential of workers. There was a higher turnover for 10 hours workers than for full-time or 30 hours positions.

The company strongly supported further education for its employees by sending them to extra courses. Those courses were mainly for people with career aspirations within the retailer and had usually finished an apprenticeship scheme before. The courses dealt with leadership and management content. To get promoted employees would usually join another store. Promoting people to other stores could also help to reduce a high cost structure at a department.

Also for customer service roles training courses were offered. The store manager decided who would attend these. Newly employed staff was either trained at the store itself for simple jobs by working together with an experienced worker for some time. For positions that required specialised knowledge, such as the fish counter, workers were sent to training stores.

Workers were clearly separated between logistics and sales function. Stores where sales workers had to organise their part of the warehouse were usually quite unstructured and the coordination was poor. There were central suggestions and plans how logistics processes should look like, but whether they were applied depended on the store manager.

The store managers enjoyed independence when it came to selecting employees. Also employees were officially employed with the store, not with the central retail organisation. The independence fitted the individuality and differences of stores. Work schedules were designed by the department leaders. All department employees had to be flexible and everyone had to work any shift. Only occasionally personal shift wishes could be considered, generally flexibility was expected.

#### **6.1.1.4 Reflective Interpretation**

As mentioned for the rephrasing interpretation, the reflective interpretation here will only provide a summary of the entire analysis effort due to reasons of readability and thesis word count considerations. The presented issues in the reflective interpretation were chosen because of their prominence in this case and/or their reoccurrence in other cases of the research study.

The most prominent issue arising when looking at the interviews is the variation or inconsistency in answers between the stores and also between stores and central organisation. Even though both stores were within the same organisational area, their behaviour in terms of ordering, employment, OSA awareness, supply chain organisation and store processes differed.

Whilst the retail organisation preferred as little interference with the automated ordering system as possible, store one regularly adjusted orders, but store two only changed orders for promotions and corrected the system if records were inaccurate. All of the interviewees mentioned the automated ordering system at a very early stage in their responses about the replenishment process (1-2-2, l. 33; 1-1-3, l. 32; 1-1-2, l. 40; 1-0-1, l. 48; 1-2-3, l. 33). This automated ordering system seemed to be absolutely central to the daily routine of the replenishment process.

The knowledge about the wider supply chain differed significantly between the stores. Whilst the local director was aware of integration problems between central logistics and stores, that would be expected due to the nature of his job,

which was positioned at the link between central organisation and stores. He saw major problems for inefficiencies in replenishment operations caused further up the supply chain. Explicitly mentioned were the missing of delivery time slots and packaging not being shelf-ready. Also store manager one picked up the topic about missed delivery slots and the resulting problems for the store. However, none of them saw a possibility to fix this issue. The local director only mentioned that staff flexibility needed to be increased; which means the solution would be making the store more agile to deal with failures instead of fixing the initial cause for the trouble, which would be an increase in the delivery reliability. Both interviewees from store 2 took a fatalistic stand towards the delivery arrival. Problems with the arrival were not mentioned. It became apparent the physical divide between the shop floor workers and the backroom also resulted in a communication barrier. The arrival of new goods had to be checked for regularly.

In the following quote the local director explains how he believes a backstore should be organised. However, he has no control over it. The way a backstore is organised is entirely up to the store manager.

*“Researcher: Are there for example rules for the backstore organisation at a store?”*

*Participant: Rules...*

*R: Or are the backstore employees trained accordingly in how to organise a warehouse?*

*P: Well, I believe, I heard about that in the past, something like that existed. Suggestions and all that exist. How that is supposed to be done. But I believe that is executed very differently at ours. Because also the stores are very different, who is responsible for the backstore. Well, I would say it is better to have someone to take over the goods and a warehouse leader, who is generally responsible for the warehouse and the tidiness there. At many stores the shop departments are responsible themselves for a part of the warehouse. And because of that, the result is a mess. There are*

*stores that have a very clear concept what goods are located at which place, beverages here, groceries there. It is clearly structured, very proper. And that works well. And then we have stores that do not have it that way. One easily notices that they do not work together. [...] Goods come in, and it is not his responsibility, but the departments'. It is not very.. very.. coordinated. And that's how the warehouse consequently looks like." (Interview 1-0-1, l. 405-422)*

The local director expressed his view how backstore operations should be organised. But he was also aware that in reality stores dealt with the backstore organisation very differently, often even insufficiently. Even though he realised that some stores had poorly organised backstores, he did not question the store manager's independence over it. The control of the central organisation over the system around the retail supply chain was extremely limited hereby. And despite the existence of process suggestions, those were not enforced onto the stores. The quote above did not arise during questions about replenishment or availability, but during the human resources section. The perspective how organisational structures should be was located within a response about the training of store personnel which then led to a question about whether there is any training about logistics processes. Store processes were considered as *"very simple processes at the store"* (1-0-1, l. 392). Nevertheless, he gave a lengthy answer about the problems that arise in that area. The problems were noticed by the local director, but the organisational system did not allow him to correct these problems, even though he was hierarchically superior to those who caused them.

At the edge between store and central operations, the control over the system became uncoordinated and did not have a common supply chain view on it. The way a backstore should be organised according to the local director, was contradicted in the following quote from a customer service employee.

*"Participant: First of all it [the delivery] is taken over. Then it is rearranged. Because often downstairs the products are mixed. It*



*is separated for the according departments and then it goes straight up to the sales area. [...]*

*Researcher: How do you notice that a delivery arrived for your department?*

*P: I go downstairs and look through the products, when the delivery is there. What is for my department. Usually the department leader goes through the delivery with me and we look at separating it for the colleague, because everyone has its own department and they look what they received. And that way the products go straight out to the shop floor. Then it is replenished into the shelves or built up. Depends what it is. Promotional built up or regular delivery.*

*R: And that happens first thing in the morning?*

*P: No, we only receive the goods at lunchtime. Mostly even at late afternoon.*

*R: Do you have extra workers in the afternoon for that time slot?*

*P: Yes, they are always scheduled as the goods arrive. I mean we have more people in the afternoon than in the morning. Because we know, the products arrive in the afternoon.” (1-2-3, I. 14-30)*

The organisation of the backstore was described exactly as it should not be according to the local director. It can also be doubted that the products go straight on the shelf, as it must take a considerable amount of time at this store building until the department leader found out that a delivery arrived and then arranged the products for the departments. The quote also reveals the inefficiencies at the point where the system was out of the control of specialised central functions people and went over to decentralised control, who did not receive any training or qualification to deal with the problem. Further qualifications for store employees did include leadership and management or product specific training, no logistics training was offered. The efficiency of store processes therefore largely depended on the store management. Another point

that stated the loss of a holistic supply chain is the disagreement of interviewees whether products were packed according to the shelf plans or not. Whilst store 2 needed to rearrange the deliveries, store 1 received mostly sequenced packed trolleys. One would assume that sequenced packed deliveries have a significant impact on required store efforts, and the confusion about this issue was another proof for the unclear system control at the edge between central operations and stores.

The quality of using the automated ordering and stock keeping system was based on experience. The lack of formal training or manuals how to use the system led to the interaction with the inventory and ordering system being based on individual experience. The following three quotes show the way employees acquired their knowledge about how to interact with the IT system.

*“Participant 2: Well, at the weekends it’s like that: the last delivery day is Friday. And of course it’s sheer gut feeling, what sells better. And then I have to take one extra day into the calculation.*

*Researcher: You do not receive any deliveries on Saturdays?*

*Participant 1: Fruits, vegetables, fresh products.*

*P2: Yes, fruits and vegetables, but no dry goods and no wine or beverages. One has to take that into consideration for the Friday, what’s going better. But with time one develops a feeling for that.” (1-1-3, l. 83-89)*

Those store employees described their ordering knowledge as a feeling, rather than a rationale process. They knew the system would fail them for Saturdays, so they took the system failure into their calculation to correct the ordering. Also a store manager explains in a short story how employees dealt with system failures.

*“Participant: Now it may be that the product is not deliverable or that the stock records are wrong. Because then the system does not function. If he did his inventory checks badly and has miscounted. And he receives no goods for two three weeks. They do not always say something straightaway the colleagues. And I pass them and say: What’s up with that tea now? Why is that not coming in? And then he says: Well, I don’t know. I say: What does that mean ‘I don’t know’? Is it not deliverable or what? Then they say: Yes [it is deliverable], but nothing arrives. And then I say: Did you have a look at your stock records? I mean, a many years experienced worker knows that. Those who are still used to the system. Others are only for replenishment. Because we also have foreign colleagues, who do not understand the system.” (1-2-2, l. 106-114)*

Some employees were reluctant to interact with the system. They did not feel qualified to interact with it, so they preferred to ignore the problem rather than communicating about it with the managerial system (the store manager or department leader) or the technological system (the IT system on the handheld scanner). Again it was experience that made workers confident enough to undertake the step of interacting with the system. In that context it has to be mentioned that the handheld scanners’ interface was designed very user friendly; an induction into the system could be considered as not too complicated. Furthermore, the interaction with the leaders would have been even easier. The importance of experienced workers was also confirmed by a store employee of the same store.

*“Researcher: Does it happen often that new people start or people quit?  
Participant: No, it does not. Thanks God not.  
R: Why ‘thanks God’ not?*

*P: Well, I don't know, it is a better team when people work together for longer. They also all feel well here. One can't complain." (1-2-3, l. 187-192)*

Even though the positive effect of having experienced workers in the department was not reflected, the lack of clear process plans and the reliance on workers naturally knowing what they were supposed to do. The employees were expected to interact with the system in order to maintain stock accuracy and to adjust orders. However, they were not introduced to the system and did therefore not know how to interact with it.

The gap between central organisation and stores also became apparent in the employment and recruitment activity of the retailer. The company favoured a two tier system, where only employees in leading positions got full-time contracts. Those would go through an apprenticeship scheme and receive strong support for further qualification. The rest of the workforce would consist of flexible part-time employees and external agency workers. However, one store manager did make an effort to employ mostly full-time and 30 hours part-time workers, as short term employment and external labourers could not provide the same level of service quality to the customers. The second store even contradicted a corporate recruitment initiative to get women after their maternity leave into the company. The corporate website advertised with the flexible opportunities at the retail stores. The store manager was extremely critical towards the employment of mothers, as public child care did open shorter than the store. The shift pattern forced everyone to do long days and no exceptions were tolerated. This store employment policy was in stark opposition to what the company presented. The recruitment for employees was part of the corporate side, but the real employment criteria and selection was done by store managers. The mismatch between the spheres of the corporate organisation and the stores resulted in the fact that the company had a system, but those who were supposed to use it or even being part of it, were not educated about it. The interaction between employees and system became therefore troublesome or did not happen at all.

This became also apparent in the matter of OSA. The local director talked intensively about the issue of OSA and projects the company did in that respect. One store manager knew about it, the other store manager had not even heard about the issue. Furthermore, all shop floor interviewees were entirely unaware of OSA. It was more a byproduct of their regular job. The impact of this non-interaction became apparent at a store bakery. During the researcher's tour around the store, the bakery actually reported high availability as a negative thing, because it would make people shop late. Unsold products had to be thrown away at the end of the day. Demand had to be planned hours in advance because of the baking time. Late shopping near closing time would make the bakery's job more difficult. The reduction of product availability was therefore seen as a good thing to educate customers not to shop late. Putting that into relation with a study by van Woensel et al. (2007) consumers of bakery products would accept a lower OSA and selection at that time anyway. And the fact that products needed to be disposed if unsold made the reduced availability understandable from a supply perspective. However, a conscious reduction of availability to educate customers could be assumed not to be in the interest of a high service level grocery retailer.

## **6.1.2 Case #2**

### **6.1.2.1 Case Presentation**

The second case is a major Austrian Do-it-Yourself (DIY) retailer that operates more than sixty stores in Austria. It employs a workforce of several thousand people. The stores can be found in all kind of regions in the country. However, the investigated stores focussed on the Capital area of Vienna. Competition with other DIY retailers hardly exists in rural areas, as the market is often not big enough for two players. Therefore, the competitive environment of an urban area was chosen. Furthermore, stores in urban areas did not have the freedom of a greenfield investment, as the construction in these areas has to consider the existing local infrastructure, space constraints, etc. Also the recruitment of a suitable workforce is more difficult in an urban area, particularly as Vienna has an extended public transport system, which makes alternative employment opportunities for retail workers easily accessible.

As in case 1 the CEO office provided the contacts for the interviews. The interviews were set up through the central function manager for store processes. The organisation had a specialised person that was in charge of store processes and also controlling whether the stores act according to central rules and that they follow the suggested store processes. If a store manager requested an exception from these rules because of local reasons, the permission of the central function manager was needed.

The supply chain worked very differently from the operations used by grocery retailers. This was caused by the characteristics of the products, as items can be huge and heavy. Many products needed technical equipment such as forklifts to be moved around. Also the inventory turnover was much lower than in the grocery sector. Consequently, replenishment lead times were much longer. A DIY store also sells many high value items, store operations therefore have to take theft as an important factor into consideration.

Even though the CEO office provided access to the organisation, the interviews with the store managers were set up by the central functions manager for store operations. Due to his position he was in regular frequent contact with the store managers anyway and the introduction to the store managers through him surely helped to ease the atmosphere. Also DIY retailing is influenced by the construction sector, and the environment was therefore very hands-on and characterised by a less formal way of behaviour. The importance of establishing a trust relationship between the researcher and the participants becomes evident in case 2. The central functions manager for store processes was very open in his answers. This can be assumed to be caused by the fact that the CEO endorsed the research and the participant also trusted the host university 'brand'. The interview time was about fifty minutes at a high pace.

The store manager at the first store took charge of introducing the researcher to the store. In opposite to this, at the second store the store manager was busy at the time the researcher arrived and a team leader was delegated to show the researcher around. The second store team leader's interview time was about the length of the interview with the store manager at store one. Accordingly, the interview time with the store manager at store two was only slightly longer than with the team leader at store one. Having mentioned this, one also has to recognise that the second store was a lot bigger than the first store and a team leader position was therefore higher up in hierarchy than at the first store. However, it is necessarily not only the hierarchical position that leads to openness towards the researcher, but also the time given for introduction and building a level of trust between researcher and interviewee. The situations at the store will be explained in the following subchapters in more detail.

#### **6.1.2.1.1 Store 1**

The first store of retailer 2 was in a residential area in Vienna. It was small for a store of that chain and the company considered the space as not sufficient. However, due to its location it achieved very high sales and a much higher

inventory turnover than the average store and was therefore one of the best performing stores of the company. The store provided 3,200 m<sup>2</sup> sales space plus a storage area of about 500 m<sup>2</sup>. Caused by the limited storage space in the store and the backroom, this store was allowed more exceptions from the standard processes than other locations. The space limitations made the management of this store particularly challenging. The store did not have the full range of products, but it had extended opportunities to order products from other stores in the Vienna area and bring them to the store for customers.

The store employed forty full-time equivalent workers. As the store was very small all employees had to engage in the replenishment process. There was no differentiation between replenishment workers and sales people on the shop floor. Only in the backstore area were purely logistical workplaces. These workers dealt with the incoming and outgoing goods and prepared them for the in-store replenishment operations.

The researcher was meeting the central functions manager at this store, who introduced the researcher to the store manager. The participants gave the researcher an introduction about the logistical system and the specific challenges of this store location. Afterwards the central functions manager was interviewed in the store manager's office. The office was located in the market itself next to the tills. The space limitations were resulting in a fairly small office area for the administrative side of the store management. The interview with the about fifty year old male store manager also took place in the store manager's office. The store manager originally learned a trade, but then started working as a store manager in grocery retailing. Thus, during the interview often comparisons with the grocery sector were made.

After the interview the store manager selected a team leader to be interviewed. The selection happened spontaneously based on the fact that was available at that moment. Out of the available team leaders one had previously worked in the central distribution of the retail chain. The store manager therefore considered him being very suitable to answer a logistics researcher's question. The interview with him was considerably shorter than with the store manager,



but again there was no introduction phase and keeping this in mind, the interview was more open than previous interviews with team leaders.

#### **6.1.2.1.2 Store 2**

The second store of retailer 2 was a purpose built store in a mixed commercial and residential area. The area was characterised by many large retail stores with plenty of parking spaces and wide streets. The store had 5,000 m<sup>2</sup> of sales area and an additional 2,000 m<sup>2</sup> of storage space located around two sides of the store. The store employed sixty-three full-time equivalent employees. However, the store also used external labour for replenishment operations in the early morning. These low qualified workers were only taken for three hours of shelf replenishment on weekday mornings. The aim of this was to give the daytime workforce more time for customers and to relieve them from replenishment activities.

As the store manager was busy, the central functions manager introduced the researcher to a team leader who then gave the researcher a tour around the store and the backstore area. After the tour the team leader introduced the researcher to the store manager.

The first interview was conducted with the team leader at the store manager's office. The interviewee was in his late twenties. He initially learned a trade before he came to the company. He started working as a CSA and became team leader at another store shortly after, before he moved to the current store. The interview answers were long and open. Reason for this may be not only the built trust, but also the fact that the team leaders at this store have many responsibilities. The market was one of the largest that this chain operates, which resulted in more management activities being passed to team leaders, because the store manager could not manage the store as closely like at store 1.

The store manager was interviewed afterwards. His office was located away from the sales area in an office area of the building. The office was furnished

functionally; there were no plants, no decoration, no coffee machine or convenient seating. The store manager started as a management trainee at the retail chain and went straight into a store management career. The interview answers were rather closed and the overall interview was shorter than with the interviewed team leader. It became apparent that the store manager did not connect too much with the shop floor. He considered himself a number cruncher and preferred working with performance indicators.

#### **6.1.2.1.3 Central Functions**

The interview atmosphere with the central functions manager was efficient. An introduction happened during the store tour and as the CEO office was supporting the research, the answers were long and informative. The thirty-five years old central functions manager came from an industry background. He started working at the retailer to fill a gap between two jobs. As he enjoyed the company and his job he stayed on. He started his career in the company at central functions and did not go through the store career path. His job description is to design store processes and to control the stores' adherence to them. His position integrates the central logistics processes and the delivery with the reception of goods at the store. Consequently, the interviewee was very knowledgeable about the logistics processes. His responses were structured and systematic. Even though the interview time was shorter than with other participants, the responses were open and lengthy. The interview took place at the store manager's office at store one, prior to the other interviews at that store.

#### **6.1.2.2 Rephrasing Interpretation**

##### **6.1.2.2.1 Replenishment Process**

Deliveries arrive at the stores from various sources several times a day. Between three and five lorries arrive from the DC, plus direct deliveries from

suppliers either through their own fleet or through hauliers. The delivery frequency depends on the season and varies with the demand. Depending on the source and way of delivery, they are managed in different logistics streams. Goods can arrive from the retailer's DC or be directly delivered from suppliers or traders. Deliveries from the DC are generally not double checked. However, if a product is only cross-docked at the DC and not stored there, it will be treated like a direct delivery at the store and needs detailed checking. Backstore workers at the store receive deliveries, check them according to their logistics stream and prepare them for the store replenishment. The check at the backstore and the system entry of the delivery are organisationally separated. The check and the confirmation when the delivery actually arrived are done at the goods reception of the backstore. Those workers however are not authorised to enter the details of the delivery into the system. They submit the delivery slip and the check form to the store office, which puts the results into the system. Penalties towards suppliers are based on the correct time and the correct amount of the delivery. As the two investigated stores were of significantly different size, the available storage space differed too. The smaller store brought the products to the shop floor as quickly as possible; whilst the larger store took until the next morning between the preparation and separation of the delivery, and the start of shelf replenishment. The storage system in the backstore is colour coded, so that employees can easily identify which goods can be taken for replenishment, which are still waiting to be checked or are allocated to a customer order.

The replenishment operations itself are organised differently at the two stores. The larger store 2 operates a system with specialised employees, where external agency workers take care of most the replenishment in the early morning. If they cannot find the shelf place of a product or when a shelf is full, they leave it for the regular employees on the floor at the aisle where it belongs to. The replenishment throughout the day is done by the sales employees and the back office. The internal employees are split into pure customer consultants, who do not replenish at all; back office workers, who are majorly responsible for the processes around the goods; and regular sellers, who are mainly there to

help customers, but also have some responsibility for the shelves. Store 1 does not use external workers anymore. The store manager experienced their employment as a threat to customer service quality. The use of external workers in the past made the regular employees unaware of the availability and location of products.

The ordering of products is almost entirely automated through the central distribution. The only way to interfere with this system is either to change stock records via the store office or to communicate with the distribution by using an electronic form on the computer system. The employees can access the computer system and find out about stock levels, but they are not authorised to make adjustments on the system. When communicating through the electronic form with the distribution they need to provide a reason for their request. Also, employees can place special orders for customers either for listed products, but also from suppliers directly for non-listed products. The smaller store 1 also mentions the sourcing from other stores for its customers. The store has a limited product range due to its size. Therefore a transport van is used twice weekly to pick up customer orders from other stores. Such a service is not mentioned at store 2, which is built in the largest format of the retail chain.

Also promotions are centrally planned. The store gets a note what will be on promotion and in some cases stock allocation can be increased. This option depends on where the product is sourced from. Very rarely products are returned. Usually products are sold off at a reduced price rather than sending them back. However, some returns are agreed with suppliers in advance, because for some promotions the retailer consciously overstocks the stores. Also in the case of an incorrect delivery a product may be sent back if it is not needed at the store. And when a product gets delisted it may be sent back to the supplier or sold off cheaper.

#### **6.1.2.2.2 Availability**

The shelves are checked every Monday morning for gaps by the back office workers. On a Monday morning the availability is assumed to be particularly bad, as Saturdays are the busiest day of the week and there is usually no delivery on a Saturday and consequently no replenishment on Monday early morning. The back office employee physically walks along the entire store and scans every shelf gap. This results in a list of empty shelves, which are then checked for buffer stock and replenished, looked for double placements in the store, or whether stock records need adjustment. The final list is submitted to the central office for evaluation. The product availability in percent is fed back to the store manager on a monthly store scorecard. The result has no impact on the sales employees.

Every regular seller at a department gets a zone of responsibility for a certain stretch of shelf metres. The size of the responsibility zone depends on the products that are offered. Together with the zone comes a weekly task list. As most products need explanation, the first priority is always on helping customers, it is followed by replenishment, shelf maintenance and shelf optimisation. The level of shelf presentation is not as high as in grocery retailing. Nevertheless, the shelves are standardised modules. Every store of the same size within the company looks the same. The store has to ask for permission to diverse from any standardised process. Store 1 had more flexibility in some aspects, as the store is small for its turnover. It is therefore allowed to fill the shelves more than the shelf module plan suggests. Diversions from the standard are only permitted if they do not lead to higher shrinkage or any other loss.

When a product is OOS the seller can respond in several ways. He can lead the customer to a substitute, he can look for stock in the buffer storage or he can place an order for the customer. By looking into the computer system or by using the inter-store exchange, he can also tell the customer when the order is anticipated to arrive. Products are generally slower moving than in the grocery sector. Most the inventory is stocked on the shelf itself and stock keeping levels

and ordering thresholds are set by the central distribution. If a product is OOS more often, the store can communicate this through the electronic form to the distribution, which looks into the problem and adjusts it. Fixing the problem permanently through a correction of the system settings is seen as more reasonable than aiming for quick solutions.

#### **6.1.2.2.3 Human Resources**

The requested qualification of employees depends entirely on their position. As the main task of sales employees is to help customers with their specific questions, they need to have a professional qualification in a trade combined with retailing qualifications such as friendliness and stress resistance. Having learnt a trade is an essential qualification for all team leaders; for lower sales position an affinity for DIY is satisfactory. For every position there is a job description that is given by the central organisation. Staff is allocated differently at the two stores, as they have different approaches to specialisation of workers. Backstore logisticians are always allocated to their area. Shop floor employees need to be allocated so that there is someone available for the customers all the time. Store 1 combines employees which are keener on selling with employees that are better in replenishing. At store 2 with its specialised staff structure, the logistics function and the sales function organise themselves independently. The staff schedule at the departments is done on team leader level, where the team can decide on their work schedules.

Which approach is to be taken on staff specialisation is entirely the store manager's decision. The store manager gets a budget for wages in percentage of the store turnover. The way employees are organised is the store manager's decision. At both stores all management and team leader positions are working full-time; also in sales the majority works full-time; part-time employees can be mostly found at the tills. Also labour turnover is highest at the till positions, which are often only chosen for a certain time, for example by students. Also mentioned is the reason of misconduct that employees had to go, which leads to labour turnover. The labour turnover target is seventeen percent for the

region. Store 1 is far above that, due to the new appointment of the store manager and the consequent adjustment of the workforce. The central organisation accepts that labour turnover in the cities is much higher than in the countryside, as less considerable alternative employment opportunities exist there and the work attitude is better.

The company offers training for new employees. They are sent to a seminar, where they learn about the company, its self-understanding and also about processes such as distribution, purchasing, etc. Even though the employees do not work in these areas, the company wants them to understand the processes that affect their workplace. The rest of the training is conducted on the job. Backstore logisticians are trained at two other stores for their job, before they start at their store. Despite the processes being standardised and the same all over the company, the backstore workers shall understand that there are different approaches to the same problem and that the solution can be lived in different ways. For existing employees the company separates between learning about processes and products. Corporate-wide standardised processes, such as the building up of a promotion stand, are taught through courses on a computer at the store itself. Product training is offered by suppliers, usually outside the store, where every employee spends around four to five days per year. The selection for training is done by the team leader together with the store manager and the employees. Generally, all courses are open to all employees and all hierarchical levels.

Another category brought up during the interview with the central function was the issue of organisation and control. The central organisation defines processes for the store. For example the concept of organising the incoming goods in logistics streams and colour coding them is given by the central organisation; so are the shelf modules and the zone of responsibility concept too. The central organisation checks every store two to four times a year on the compliance with the processes. Every store process is checked. Exceptions from the standard processes have to be applied for by the store manager and can only be allowed if shrinkage or other monetary loss does not increase

through it. Every product department has a team leader, plus there is one team for organisation issues that takes care of store processes like the tills, the price tags, etc. This part of the store office is responsible to keep up the compliance with the processes. These employees report to the store manager and also to the central organisation. Furthermore, shop floor employees are not permitted to change stock records on the computer system, but have to hand in a note to the store office to get them changed. This way, shop floor employees cannot cover theft on the system.

### **6.1.2.3 Reflective Interpretation**

Over the five interviews of case 2 the consistency between them becomes apparent. Even though the interviews were conducted at different stores and levels of the organisation, the respondents' answers do not disagree with each other at any point. However, the participants set different focuses in their responses and mention individual topics.

All interviewees mention the concept of logistics streams at the retailer. Due to the product characteristics of a DIY retailer, the stores receive multiple deliveries every day from different sources. Particularly bulky and heavy goods are delivered directly from the suppliers. Other deliveries come from the DC's warehouse or are cross-docked at the DC. The different types of delivery require a different way of taking over and checking the goods. Combined with the different options on the demand side, where products can for instance be customer ordered or regular supply for the shelf, this leads to several ways of dealing with goods. Therefore, the categorisation into logistics streams made the otherwise quite complex handling of multiple deliveries easier to be managed and overlooked.

As all interviewees talk about the logistics stream concept, the standardised way in which the retailer operates its material flow can be considered common knowledge within the retailer. The shop floor interviewees prove to be confident in using and accessing this system. The consistence and standardisation of the



logistics processes make it easy for them to work with the system. Despite a high level of standardisation, the employees can communicate with the central distribution through electronic forms. This way they do not see the need to work around a standardised system, which might not be tailored to their needs, as it can be fitted to the store's situation. Even though the employees could access the system for information, they could not request goods directly, but had to go through the central distribution or the store office.

Despite the reordering being done by the central distribution, there are few occasions when the store employee needs to specifically order a product for a customer. Even though it is still ordered through the central organisation, the employees perceive this action as ordering by themselves, whilst the regular reordering through the central organisation is considered a passive act.

Special requests made by the store are double checked by the central distribution. This is considered necessary to avoid the ordering of 'nonsense' (*"Blödsinn"*) (2-0-1, l. 107). Hitherto there is a certain level of mistrust between the central specialised logistics function and the store. Nevertheless, the stores seem to accept that they need to justify a request, because the central distribution would otherwise be unable to do their job properly. They also see their own benefit by receiving the necessary responses to their requests (2-2-3). The reception of appropriate responses and the individualisation that the system provides to the shop floor employees to satisfy customers, leads to a high acceptance of the system. As a result there is no indication that the stores need to work around the system or manipulate it in their own interest.

Working around the system would also be prevented by the central organisation through regular checks of the store processes. Those checks to align the store processes ensure that the central organisation can rely or predict on what is happening at the stores. As much of the logistics decision making is centralised, but based on observations far away from the central, those checks actually allow the retailer to understand the store when interacting with each other through the system. Besides the checks, every store has a team leader for 'organisation'. This team does not only report to the store manager, but also to

the central organisation directly. Furthermore, all stock record changes need to be made by this team. Store employees cannot make any changes on the system themselves; neither can they change numbers of received deliveries. Not being allowed to change the system themselves directly is not interpreted as mistrust by the store employees, but rather seen as a necessary issue of mistrust, that is logically needed in a retail company, where shrinkage is a common phenomenon. By having a control instance between the system and the shop floor employees, the company ensures high levels of data accuracy. Again this is needed to manage the system centrally.

All interviews show a fairly extended supply chain view. The answers use the standard process, even when that standard process does not fully match the researcher's question. The answers include players at other parts of the supply chain and the organisation. The shop floor respondents' view is not limited on their own field, but also considers other parts of the organisation and the impact that decisions of others or of themselves can have somewhere else in the system. The knowledge about the supply chain processes is provided at classes at the beginning of employment at the company. New employees learn about the retailer's supply chain and organisational structure. This includes knowledge about areas of the organisation that the employee does not necessarily directly get involved with. However, it helps the employees to be aware of the impact of their decisions and therefore smoothes interaction with other players in the supply chain.

None of the interviewees paused at questions about on-shelf availability. They also did not need any clarifications and were familiar with the wording. Hence, one can assume that the interviewees are aware of the problem of product unavailability and did not hear about the issue for the first time. The store is checked weekly for empty shelves, which is probably quite frequent considering the low inventory turnover. This weekly check needs to be seen as an additional check to ensure data accuracy. But it also shows a high awareness for the issue of product availability. The OSA rate calculated from those weekly checks does only consider those gaps, where no further inventory exists within the

store. However, the company assumes that most customers talk to sales employees anyway during their shop. An empty shelf will therefore not instantly result in a lost customer. It also helps the central reordering to have accurate data and allows adjusting the system. The routine of weekly checks by the back office workers takes the burden from sales employees to report every OOS to the central distribution in order to get replenished properly.

This is in line with the aim of focussing on sales, rather than logistics. The interviewees point out the priority of serving customers over filling and maintaining the shelves. Store 2 puts the focus on sales further by specialising the workforce into pure sales consultants and logisticians. Shelf replenishment is executed by externally hired labour. These workers are lower paid than the regular workforce and they are not entitled to the benefits of the retailer's workforce. The external logisticians are also entirely excluded from any interaction with the system. They do not have access to the computer system. If they do not know where to place a product, they place it in the corridor for the regular workforce. Due to being excluded from interaction with the system, they cannot find out where it belongs to. Store 1 however refuses to use these external replenishers, because they led to less interaction of the sales employees with the goods. The replenishment leads to interaction with the logistics system and the goods. At both stores the sales employees have zones of responsibility for several shelf metres. At these zones they are responsible for the replenishment and shelf maintenance. However, they are still supposed to sell at all areas.

The specialisation in logistics was particularly clear at the backstore operations. The employees, whose responsibility was the management of the backstore warehouse area and the delivery and return of goods, were differently trained than other store employees. Despite the flow of goods being very structured in the approach of logistics streams, the company appreciated that there were different ways of dealing with this system. The processes were in fact the same across all stores of the company, all backstore workers had to follow the same guidelines and all had their process adherence regularly checked by the

operations department. Nevertheless, these workers were trained at two different stores before being employed at their new position. The interaction with and within the system can be considered as being affected by individual factors and the immediate surroundings. Even though the logistics process on paper is congruent over the entire organisation, the individual store employee has its own way of interacting and using the system. Giving the workers several impressions how the backstore operations are run at other stores before putting him into his own operations, gives the employee the chance to individualise his approach to an otherwise very strict and predetermined system.

### **6.1.3 Case #3**

#### **6.1.3.1 Case Presentation**

Retailer 3 is a major German grocery retailer. It runs several hundred stores and employs tens of thousands of people. Due to its size, the data collection here was more difficult than at other retailers and got delayed. There are two reasons for the delay. The work council in German companies is traditionally very powerful and its permission was needed for the study as it involves employees. The work council therefore had to evaluate whether there was any potential harm to workers from the research project. The second reason was an ongoing investigation of the German grocery scene by the German competition watchdog. Thus, the company became more sensitive towards sharing information about their operations and internal stakeholders had to double check that the research does not reveal any sensitive information about the company. This delay in the data collection provided learning not only for the researcher about potential threats to a research project; but much more it also reveals the slowing effect of organisation size. Even though the project was supported by senior management from the central organisation, there were still more stakeholders to be considered and formalised permission gaining processes had to be followed. It was unclear at that point whether the high level of centralisation and formalisation was only caused by the retailer's size or

whether there is a cultural tendency at this company to be run centrally. Whilst some European retailers come from a cooperative background, this retailer is a stock exchange listed company. A cultural difference between these organisation types might be inherited when setting up operations and structures.

The investigated stores were selected by the retail company. Due to the need of getting the work council's permission, particular care was needed at questions about human resources and the workplace. Nevertheless, the requested changes to the interview guide were minor and the rejected probes were effectively not used in previous interviews. Therefore, comparability and validity of the interview guide was still given. Throughout the flow of the interviews no difference to previous interviews was noticed by the researcher. Further, as a procedure to protect employees, the stores were given the interview guide in advance by the company, so that employees could prepare for the questions. However, only interviewee 3-1-2 seemed to be prepared for the interview. One had to substitute, as the originally considered participant was unavailable. The other interviewees seemed little prepared or were only told a short time before the interviews that their participation was needed. Therefore, a response bias can only be assumed in interview 3-1-2. Four interviews were conducted at each store. They were arranged through the company. In agreement with the researcher it was decided to cover the chilled category and the health and beauty department. The reason for this selection was the extra challenges occurring with goods that need temperature control; and for health and beauty to cover a non-food part of the hypermarket. As the retailer could not identify a central function responsible for store operations, the interviews at the store level were increased by one.

#### **6.1.3.1.1 Store 1**

The first store is located in an out of town shopping complex. It is surrounded by smaller towns and the next motorway is relatively far away. The store opens from eight am till ten o'clock pm. The building is shared with smaller retailers

and was purpose-built a few years ago. Before the new building, the hypermarket was in a building just next to the current one. It is the only grocery retailer in the shopping complex, but parts of the non-food and food assortment is also covered by specialised category retailers at the place. The store was refurbished a few years ago. It enjoys a flagship status within the retail company.

Despite being a flagship store, the store does not receive extra resources for its regular operations. The research activities are run by central functions and are managed separately from the store. The store's sales space is 8,600 m<sup>2</sup>; storage space is about 700 m<sup>2</sup>. The store employs 195 people, which is translated into 133 full-time equivalents (FTE). It also uses external labourers provided by an employment agency, which are not counted into those numbers. It offers 80,000 SKUs. Due to several takeovers in the past and local planning requirements, the retailer runs stores of several dimensions. Store 1 is in the largest category of the retailer.

The researcher was introduced to the store manager's secretary by a contact from the central organisation. The secretary called the participants for the interviews away from their workplaces. All employees at the store were very friendly and open towards the researcher. This tendency might be explained by being used to having research activities at the store and by the social culture in this area. Also the fact that a strong work council protects employees and the information that they will be interviewed has probably increased openness.

All interviews were conducted at the store manager's office, which was located on the first floor next to the tills within the store. The office area was furnished functionally. There were windows all around the office, which were looking into the store. All four interviewees were female. The first interview was with the department leader for chilled and frozen products, who was in her late forties. She made an apprenticeship at a retail company that was later taken over by her current employer. Despite no introduction and trust building time the interviewee was very open in answering.

The second interview was with the department manager for health and beauty, who was in her twenties. She also went through an apprenticeship at the retailer and started as a customer service employee at interviewee 3-2-3 (1)'s department. Then she achieved further qualifications supported by the company and became department manager. Due to childcare commitments she is on a three-quarter position.

The third interviewee at store one is the manager of the wine and spirits department, which is a sub-department. She is the youngest of the interviewees. As the previous interviewees she went through an apprenticeship scheme at the store. The section's workforce consists of the interviewee herself and two apprentices.

The final interview was with the deputy store manager. She graduated from a higher education programme that combines studies and practical experience at the retailer. She was in her early twenties and her career scheme is aiming towards store management. The deputy store manager also gave the researcher a tour around the backstore.

#### **6.1.3.1.2 Store 2**

The second store is located in a residential area in a large town. It is also run as a hypermarket, with a few smaller shops inside the retail store and around. However, there is no larger shopping complex around the store. The retail company got the location when it took over another retailer. As a consequence the store's catchment area overlaps with other stores of the same chain. The store is spread over 8,650 m<sup>2</sup> and has about 850 m<sup>2</sup> of backstore space. Its assortment contains 80,000 SKUs. The store employs 140 employees, the full-time equivalent was unknown. However, the store does not use external replenishers.

The researcher was introduced to the interview participants by the contact from the central organisation. The –all male- participants were informed about their participation and the questions in advance.

The interviews were conducted at the store manager's office which is located in an office wing attached to the store. The first interviewee was the deputy store manager, who is in his late fifties. He started his career at the store when it belonged to another chain that was later taken over by the current company. His answers were more closed than at the previous store, but became more open with time. The interviewee also gave the researcher a tour around the store later.

The second interview was with the department manager for chilled and frozen goods, who was in his thirties. He grew up in the local neighbourhood and did his apprenticeship at this store. The third interview was with the department manager of the health and beauty category. He was in his late fifties and was the only interviewee with a non-straight career path. He switched companies and sectors frequently when he was younger and only decided for a more stable position when he founded a family.

The final interview was with a regular employee at the health and beauty department. The interviewee, who is in his late twenties, did an apprenticeship at the retailer. Next to his job the participant is studying business part-time.

#### **6.1.3.1.3 Central Functions**

The retail company was unable to identify a person at central functions that is responsible for the store processes. According to the headquarters all store processes are managed in a decentralised manner at store level. During the interviews it became apparent that several headquarter departments affect store operations. However, there is no single position to look at store processes and the store's logistics operations were left to the store management. The data collection at this retailer was the only case in the study where no interview with a central function position was conducted.



### **6.1.3.2 Rephrasing Interpretation Case 3**

#### **6.1.3.2.1 Replenishment Process**

Products arrive at the stores from different sources. Most deliveries come from the company's own distribution centres. The deliveries are arranged in four categories: food, non-food, temperature controlled and promotion goods. Each category arrives in separate deliveries in different lorries. The stores also receive deliveries from suppliers directly either by lorry or parcel services. Each store can decide on the delivery frequency. Store 1 receives more deliveries from the DCs with perishables delivered daily and food deliveries arriving two or three times a day. Store 2 is supplied with temperature controlled goods and food products five times a week. The time slot for deliveries can be fixed for 48 hours order cycles, but is not predictable for 24 hours order cycles. At both stores the department manager for dairy products was interviewed and both mentioned shelf life as a particular issue of their replenishment operations. The dairy team leader at store 2 faces the issue that the high delivery frequency leads to the effect of having several 'best before' dates on the shelf for the same product and that the replenishers have to walk more often than necessary. Store 1 instead has the problem that there is not enough shelf space to accommodate the demand and therefore constant replenishment is required.

Goods arriving from the DCs and most suppliers are not checked at the stores. The pallets are scanned to ensure that the correct pallets arrived, but the products on the pallets are not counted or checked. However, the stores receive a financial compensation in percent of the delivered goods from the DC for incorrect deliveries and broken products. Some external hauliers are not connected to the company's computer system, for those deliveries the pallet numbers have to be compared manually to the order lists. Despite the automated compensation for incorrect deliveries, the stores can complain directly to the DC if a major error occurred; these mistakes are easier to be spotted in non-food as the number of products is generally lower than for groceries. After arrival the product is brought into the according department's

backstore area by the goods reception workers. Every store department organises its own aisle at the backstore. It also organises its own way of warehousing the goods. Interviewee 3-1-3(3) explains that she puts promotion goods in an easily reachable location as they need more frequent replenishment. There is no general guideline how the department is supposed to manage its storage area. Nevertheless, both stores put paper sheets on pallets stating when they were replenished from the last time. Interviewee 3-1-3(3) also runs a paper list stating what products are on which pallet. This way one can find a certain product when it needs to be replenished. In the IT system, employees can only see that a product is supposed to be in the store, but they cannot identify whether it is at the storage area or at the shop.

The shelf replenishment is organised departmentwise at both stores. The department manager, or in his absence the present employee, makes the decision which products needs replenishment. This priority setting differs between the interviewed departments. In all cases the decision is based on an optical check of the department prior to starting replenishment. Interviewee 3-1-3(2) had core products with constant sales and high importance to customers that were replenished first thing every morning. After this task the replenishment priorities were based on *“what aisle looks worst”*. Interviewee 3-1-3(3) focussed the replenishment on fast-movers and promotions. The regular replenishment happens on a constant cycle between the product categories. At store 2 interviewee 3-2-3(1) starts with filling up the larger gaps before going on with the regular replenishment. 3-2-3(2) bases his decision on what employees are present at the time, as the employees have zones that they are allocated to. The employee in interview 3-2-3(3) firstly fills up fast selling promotions and then bases other replenishment on the optical appearance in his zone.

At both stores the replenishment operations start before the store opens to customers. Store 1 uses external employees in the early morning to fill up the shelves from newly arrived pallets. Pallets are given to the external replenishers

to be put on the shelves. The external service provider is paid by the pallet. It is also stated that the store management prefers to have the externals out of the store before customers start shopping. Nevertheless, external replenishers are also throughout the day at store 1, mainly to cover peaks. These externals are never alone in the department. They are not wearing the retailer's dress. In case customers might ask them for help, they are supposed to redirect customers to store employees. Frequent customers also learnt that these replenishers cannot help them and address workers with the retailer's corporate dress for enquiries. Store 2 uses external replenishers for its operations only to cover peak trading periods.

The ordering system is mainly automated. The department managers set the maximum stock level for a product. Interviewee 3-1-2, 3-1-3(2) and 3-2-3(3) consider the maximum stock level equalling the shelf space for a product. Interviewees 3-1-3(1) and 3-2-2 however point out that the required amount of stock can exceed the available shelf space. Based on the set maximum stock level and the till sales data, the system then calculates the necessary delivery order using the maximum stock level, the average sales, delivery schedule and minimum stock. The computer system makes order suggestions that are reviewed by the department managers before being submitted as an order into the system. The department managers can manually change the order suggestion on a printed document. This way they can include local demand knowledge and customer orders. All interviewees at store 1 mention that one needs to review the system's order suggestions. Interviewee 3-1-3(1) particularly mentions this for multi-variety cartons, where the supply mix does not necessarily match the demand. Interviewee 3-2-3(1) mentions manual ordering for products with very short shelf lives and considers that experience is needed to find the correct amounts that need to be ordered. These two interviewees are both managing the dairy department of their respective stores.

Interviewees at store 1 also note that the DC and merchandiser (area manager for a product category) can be contacted by email for urgent orders or to get a top-up on a currently running promotion. Order suggestions do not only come

from the computer system, but also suppliers' sales employees visit the store regularly, either to check stocks and order products, or to convince store employees on increasing the system's orders manually.

Promotions are ordered several weeks in advance. The team leader can access historical data in the system to see information about past promotions of the product. If the team leader assumes the demand wrongly, one can contact the DC during the promotion week trying to receive extra stock with the regular delivery operations. If the demand was assumed too high, the overstock would be integrated into the regular stock in case of a listed product; being returned to the supplier if this is previously agree; or put on a special sales area until sold.

Shelf life is mentioned by most interviewees of this grocery retailer. Particularly the dairy department interviewees 3-1-3(1) and 3-2-3(1) mention the issue of shelf life. The company uses a computer tool to support employees to monitor 'best before' dates. This tool is not used by the temperature controlled departments. Every six months the employees note all 'best before' dates of their department. The tool then issues an alert some time before it hits the 'best before' date. Employees then have to check whether the product is still on the shelf or if it was sold in the meantime. The employees also constantly check for 'best before' dates when they are replenishing and need to follow the first-in first-out (FIFO) principle. Three days before grocery products hit the 'best before' date, they are taken off the shelf. The retailer donates them to local food banks that pick up these items from the store. Other products are disposed at the store, picked up by the supplier or given away to employees. Returns to the DC happen very rarely. Only large incorrect deliveries, such as an incorrectly delivered pallet or recalls for quality reasons are sent back to the DC. Goods can also be sent across stores, when one store received too much of a product and another store can sell it. This inter store transport is then integrated into the regular delivery tours. However, this is only very rarely used.

#### **6.1.3.2.2 Availability**

OSA is measured physically at both stores. Depending on the department, the availability is measured weekly in food departments and twice weekly in fresh food departments by an employee walking through the store, scanning all shelf tags at empty shelves with a handheld scanner. The deputy store manager at store 2 warns that shelf gaps should not be filled up with other products. This would make the gap undetectable and does not solve the problem. Store 1 also checks the sales data of fast-selling products such as the own-label brand, promotions and top 20 sellers of every department. A drop in the sales rate is taken as an indicator that there must be a problem with the product availability or presentation which needs checking.

The physical shelf check results in a list of OOS products. This list is given to the department managers to check on those OOS. The list with reasons for the OOS is forwarded to the store manager and the area manager. Store and department are measured on the OOS list. More important for interviewee 3-1-3(1) is the issue that higher availability leads to higher sales. As the staff level is based on the turnover of a store, a higher availability leads to higher job security. As a trade-off interview 3-2-3(1) rises the point that the department is also measured on inventory levels. The OOS can be caused by many reasons. Interview 3-1-3(1) recognises low staff levels as a major problem in the past. This led to the problem that products were in the backstore, but the employees could not bring the products on the shelf quickly enough on busy Friday and Saturday. This did not only cause poor availability but also frustration among the employees, as they could not satisfactorily do their job. She appreciates the hiring of external replenishers having helped to increase product shelf availability. Also interviewee 3-2-3(1) sees low staff levels as a problem for bringing products from the backstore to the shelf.

As the automated ordering system should always ensure full shelves, an OOS can essentially only be caused by incorrect stock records or incorrect maximum stock level on the system, insufficient replenishment in the store, or the non-deliverability of a product. Interviewee 3-2-3(2) and 3-2-3(3) mention

non-deliverability of own-label products during a packaging or supplier change as a significant OOS experience at their department; with one discount range product not being available for months. Individual problems for the departments are multi-variety cartons, where the delivered mix of varieties does not match the required demand. In the ERP system those products can then appear as available, even though a certain flavour is sold out. Consequently, the system does not issue an order as it does not differentiate between the different kinds. Interviewee 3-1-3(1) needs to order these products manually and check the availability of these products frequently. Also interviewee 3-2-3(2) talks about products with a high variety being OOS more often. He relates this to incorrect scanning at the till, when customers buy a mix of varieties but the cashier only scans one item. All interviewees mention incorrect stock records as a main issue for OOS. The response towards OOS is therefore the check and correction of these.

In the case of an OOS customers may approach employees for assistance. In that case the employees can check the handheld scanner whether the product is still in stock and then look at the backstore to get the product. The dairy department and health and beauty department interviewees at both stores state that they would look at the backstore and even entire pallets would be rearranged to get the product. In case a customer asks for a product, interviewee 3-2-3(3) checks the stock records, look whether there is a newly arrived delivery that is not on the system yet or to consider if the product has a second placement. If the product is not available at all, the employee can offer a substitute product or call another store of the chain close by if it is in stock there. Interviewee 3-1-2 also says that products can be transferred between stores; that would not be considered for groceries but for higher value non-food products. The only interview mentioning rain cheques (a voucher issued by the store employee to allow the customer to get the promotion price for an OOS product at a later point when the product is available again) is 3-2-2.

The team leader can respond to demand varieties by changing the shelf space allocation within a product. For the health and beauty and the dairy departments

the shelf space allocation and shelf layouts are given by the retailer's headquarters; but within the varieties of a product the department can make alterations. Interviewee 3-2-3(1) describes that for ice cream *"there are chocolate stores and there are vanilla stores"* (l. 143). The local demand variation can be balanced by the team leader through alterations in the shelf space allocation and through the manual interference with the ordering system. The wine subdepartment at store 1 (3-1-3(3)) needs to follow shelf space allocations for wine origins. Within the country of origin she can decide herself on the shelf layout and space allocation. The assortment is given by the central, and all products listed have to appear. The department managers have the opportunity to communicate with the decision makers to request certain products being listed at their store, which is usually considered. A change of the store assortment is not always communicated to the stores. Sometimes a delisting is only noted after the shelf place shows a gap for some time. The shelf layouts are designed in negotiations between the category captain and the retailer. By the time a new shelf plan is agreed the assortment has often already changed. If a product gets delisted the neighbouring products can be faced a bit wider to cover the gap.

The area manager for a category visits the stores and the department managers for his products regularly. They also hold a weekly phone conference. The team leader can exchange information with the so called merchandiser and also communicate between each other.

#### **6.1.3.2.3 Human Resources**

The human resources budget of a store is calculated as a percentage of the turnover. The way this budget is spent, is the store manager's decision. Although some external replenishers can be found all day in store 1, interview 3-1-3(2) describes that the team leader tried to integrate an external employee fully into the team with the ability to work with the ERP system. This attempt was refused by the store management and the labour councillor at the store. The deputy store manager of store 1 states that internal employees are

for the qualified jobs, whilst external labourers are used for unskilled tasks (3-1-2).

Almost all employees at both stores went through a two or three years' apprenticeship at the beginning of their career in retailing. Most of them did such an apprenticeship at the retailer itself. Human resources selection is based on formal requirements. The company runs an internal qualification programme. Employees can attend seminars and e-learning lessons about their respective product area. It also has a team leader development programme that identifies potential team leader and educates them through a one year programme that consists of several block courses. The selection for this programme is taken seriously and the acceptance to it is understood as the natural step to progress in a career at the retailer.

It is usual that employees in leading positions work full-time. All other positions are mixed, with an increasing tendency to part-time. The departments make their own shift system. The department has to be covered at all times. How the shift system looks like in detail, is the department's own decision. With the extension of opening hours and the increase of part-time employment, the employees of one department see each other less often. It is also pointed out that the number of internal employees is constantly reduced and the stores run on minimum staffing levels (3-1-3(3); 3-2-3(1)). At store 2 the team leaders meet weekly to discuss promotion activities, at store 1 they have workshops together. The entire department hardly ever meets. The dairy department at store 1 has a biannual department meeting, when another department takes care of their area, as the employees would otherwise never see each other altogether.

The departments are controlled by central revision for their adherence to the retailer's rules and guidelines. Those visits happen irregularly and they are important for the store employees.



### 6.1.3.3 Reflective Interpretation Case 3

An early insight gained into this case was that a central contact for store operations on headquarter level could not be identified by the retailer. Throughout the interviews several central contacts were mentioned that the store dealt with. The area manager, the so called merchandiser, the DC and the purchase department were the contacts at the central organisation that employees needed to talk to in relation to product availability. However, none of the interviewees mentions any sort of hassle identifying the right contact for enquiries. The form of communication is usually via forms and the electronic ordering system, but also through emails, phone conferences and store visits. Whilst the interaction via the formulised way is dealing with standardised processes, the direct communication is mostly used for case by case issues and corrections of the standard processes, such as short term increases of promotions. The inconsistency of this direct communication with many contacts is expressed in interview 3-1-3(3), where the interviewee answers to the question about receiving information that an article is delisted:

*“Partly. Sometimes yes, sometimes no. Sometimes the article is just out. We only recognise that the article is not there anymore; and that’s it. Unfortunately we do not receive a note for every single article.” [...]*

*Researcher: Cause the shelf layout changes as well, doesn’t it?*

*P: Exactly, regularly. But that does not always work perfectly.”*

*(l. 492-499)*

It is not only internal players that the employees communicate with. Depending on the department, they engage with suppliers more or less. Interviewee 3-1-3(3) receives deliveries from suppliers and has to take their ordering restraints into consideration, which leads to suboptimal ordering.

*“That’s the case with some suppliers, they have minimum orders of thirty or forty cartons. Of course one cannot exactly order what it [the automated order system] suggests. Sometimes one has to put together orders, as one needs three*

*articles out of ten. Accordingly one has a bit more in stock.” (l. 47-51)*

The ordering process itself is run through the standard order system through which products from the DC are ordered too. However, the influence of external players prevents optimal ordering.

Within all interviews, the automated order system takes a prominent role and is always mentioned in the initial response to the question about the flow of goods in the store. The automated ordering system also takes a large space in all interviews and all participants are confident in explaining the system and how it works. This shows the central role of the ordering system to the daily operations at the store and the communication through it. The team leaders receive an order suggestion from the system but can change it manually before it is submitted into the system. Hence, the system and the team leaders are interacting at this point with the employee being the eventual decision maker. The need for manual interference with the ordering system was seen more in dairy products, where the team leader corrected many of the ordering suggestions. The health and beauty team leader however did not mention order corrections to the same extent. One can assume that the short shelf life of fresh products made the manual interaction with the ordering system necessary. Overstock at the health and beauty category could be stored for some time. The temperature controlled products however would perish and had to be disposed and written off. A more in detail ordering and adjusting of orders to daily demand variations were therefore more necessary at this department.

The team leaders also enjoy a differing level of independence when it comes to the allocation of shelf space in their respective areas. The dairy and the health and beauty departments have given shelf plans. The team leader can adjust the allocation between the varieties of a product or cover gaps from delisted products on their own. Also the usage of putting cardboard boxes on the shelves or placing products individually was left to the department managers. The wine department could decide itself about the shelf space allocation within the given space for certain wine regions.

The high level of local decision making of the team leader was surely affected by the size and turnover of the stores. It was consequently supported by high qualification levels of store employees. Almost all internal employees had accomplished an apprenticeship at the retailer, and the team leader went through a one year development programme.

Accordingly, the interviewees all show a deep understanding of the organisation's relevant processes towards their job. They all explain not only the ordering and the ERP system, but they can also explain what impact it has when they change data.

Human resources selection was strongly based on formal qualifications. For an apprenticeship place the applicants need a secondary school qualification of a certain level. Admission to the internal development scheme later requires a three years' apprenticeship; and store management positions will either need a higher education degree or the way through the internal development scheme.

The fluctuation of personnel is very low and the usual reason for leaving the company is a maternity break or retirement. Full-time employees are on a permanent contract. Under German employment law and with a strong labour union the breakup of the employment is difficult. This may be a reason for the low turnover, as employees prefer to keep their jobs, which are considerably well protected for the retail industry. Also the high qualification level and the low turnover are essentially needed to run the store operations at the retailer. The team leaders enjoy a high level of independence and a high responsibility. For the successful fulfilment of their tasks they actually need experience, ability and knowledge. This is gained through the qualifications and time within the organisation.

Despite most the employees were officially employed in sales, they understand their job as a mixture of sales and logistics. The replenishment activity is understood as the foundation for customer satisfaction, even though they work with the product and do not interact with customers at this point. The focus on the replenishment is stated in interview 3-1-3(2):

*“Basically, we do nothing else than regularly providing the goods. The right amount in the right quality.” (l. 164f)*

Nevertheless, many points in the interview are argued from a customer’s perspective. For example the replenishment is conducted with shopping trolleys, if bringing a pallet out into the store would get in the customers’ way. The team leader health and beauty at store 2 assumes that 30% of working time is used for helping customers. He also sees health and beauty as a particularly consulting intensive category. Even though one might assume the dairy department needing less consulting time, the department team leader dairy at store 1 explains that all employees receive training about products and category specific knowledge. Also employees are expected to offer their assistance to customers who appear to need help.

The high qualification level may be one reason for the specialisation of the workforce. At store 1 much of the daily replenishment is done by external workers. The external do not receive the same amount of qualification and they are not supposed to communicate either with the computer system or the customers. Interviewee 3-1-3(2) tells the story of explaining the system to an external employee who works full-time in the department:

*“What I do not let the external do; I was initially planning to do it, but then the labour representative and the boss told me not to do it; I wanted to integrate her [into the department’s workforce] to an extent that she can do ordering and things. But that was not favoured.” (l. 642-645)*

She explains one reason why she wanted to integrate the external worker more:

*“And I find it important for the employees that they feel better at the department. I mean, it’s something different; instead of packing all day, if one can make an order in between. Or change a stock record or something like that”. (I. 654-657)*

The workforce is therefore separated between qualified internal employees who have full access using the system; and external replenishers who conduct the unskilled jobs.

The internal employees also stay for a very long time at the company. The only reason for leaving the company that comes into the interviewees’ mind is a maternity leave or retirement. Some even interpret the question about workforce fluctuation as changing departments within a store or changing stores within the same chain.

Measuring OSA at the stores happens by a weekly or biweekly physical check of the shelves. Nevertheless, the interviewees check their departments every morning to look up which areas need attention. Some interviewees also understand their job as to constantly look for OOS. Store 1 also uses sales data to monitor fast moving products. In case the sales drop, it is investigated whether an OOS occurred. Store 2 does not mention such an approach. It remains unclear whether store 1 can use sales data for the monitoring because of its flagship status or if all stores would be able to run it.

A problem for the customer service employees is it to bring products to the shelves on time. Particularly the dairy product team leaders face the issue that in-store fridges can only be stocked to a certain level to ensure they are still temperature controlled. At the most busy shopping days, Friday and Saturday, the shelf space is by far not large enough to cope with the demand and constant replenishment is needed throughout the day. As the staff level is kept low, the problem is often about getting the product on the shelf. It is therefore not good enough to manage the stock records to keep the automated ordering system going. Also the in-store operations have to keep up with replenishment

operations. Both dairy team leaders mention that they added external replenishers for their weekend operations to cope with replenishment. Asked what type of employment would usually be considered, a deputy store manager explains:

*“I think it depends for what the colleague is needed. There are employment costs. Internal employees are of course a bit more expensive due to the social insurance. [...] But if I need a qualified employee who works at a service counter. Who needs to show skills in electrics; or really has to advise customers in non-food or somewhere. Or also in food, who needs to know how to order. I know that I need so many employees to cover that. I need coverage at all times, from eight in the morning when the store opens till ten pm, with someone who knows the department. [...] Do I only need them for replenishment, then I do not need a skilled employee. [...] One always has to keep the balance. I definitely need my core, who knows its stuff, who is competent in consulting customers and ordering. To keep the department running. But if it is only about replenishment or to cover late shifts at the till, we happily use external providers.”*  
(3-1-2, I. 473-517)

Store 2 is more reluctant to use external employees. However, the turnover of store 2 is also much lower than store 1 and therefore needs less peak coverage and the regular employees can still cope with the replenishment. Considering that store 2 increases its sourcing from external labour suppliers and the fact that store 1 is a flagship store, make one assume that there is a general trend for more external employment, despite all stores being in essence independent on this decision.

Another system that is used at the stores is an expiry date detection tool. In set time intervals all products with an expiry date are registered in a database. A defined time before the end of their shelf life the system issues an alert. The employees then check whether the product is still on the shelf and take it off. As

interviewee 3-1-3(2) puts it, the system could be easily replaced by a spreadsheet. Nevertheless, it is recognised that the system makes work easier, as one does not have to worry about the shelf life issue. One only has to check if the newly replenished products have a longer shelf life than the ones that are already on the shelf. The tool is positively recognised as it supports the employees in their daily task. It does not dominate the employees in what they do, but is only perceived as supporting the operations.

The dairy departments do not use the expiry date detection tool, as their products expire too rapidly. Interviewee 3-2-3(1) mentions traditional fresh milk, which only has a remaining shelf life of four days when it arrives at the store. As the stores are closed on Sundays, everything that is left on Saturday at closing time is disposed. Therefore ordering is usually considering an amount that will be sold, even if that means that the product is OOS for the last hours on Saturday. It takes some time to find the right amount to be ordered. Hence, the management of departments is individualised depending on the product characteristics.

The definition of OOS differs between system and some employees. The system of physically checking shelves for gaps means that - as long as all shelf tags are placed correctly- the check perceives the shelves as a customer perceives it. Interviewee 3-2-3(2) however comments that the same product can be put on several hooks right next to each other. If one of the hooks is empty, the customer will probably not perceive it as OOS, when it is still available on another hook. The list of OOS that results from the physical check is worked through by the employees. And after they did that, only few “*real* OOS” remain (l. 137f).

The perception of an OOS can also differ between employees and customers. In interview 3-2-3(2) the issue arises that much time is spent on explaining where customers can find a product they are looking for. Particularly older customers do not want to make long walks around the hypermarket to search a product. Due to the store size customers might regard a product unavailable to them, as they consider it too hard finding it.

#### **6.1.4 Case #4**

##### **6.1.4.1 Case Presentation**

The fourth retailer in the study is a UK fashion shoe retailer. The data collection at this company was set up extremely efficiently, with the time between initial contact and the data collection only being three weeks.

The company is relatively young and expanding. The company is positioned midmarket and aims particularly for teenagers and young twenties as customers. It operates about sixty stores across the United Kingdom and Ireland. Next to its stores it also runs an online store that stands for about fifteen percent of the business and is run from the same NDC as the store operations. The stores get deliveries only from the own NDC daily from Tuesday till Saturday and no direct deliveries. However, stock transfers between stores can be sent directly. Once a week reverse operations take place to send back returns and to reshuffle stock. The haulage is outsourced to a logistics service provider. The company also offers an own label range which is processed like a regular supplier in the logistics system.

The number of SKUs differs between stores. Each store gets an individual assortment depending on the sales. The company's largest store would stock up to 2,000 different styles of shoes. Approximately one thousand pairs for each sex. The assortment is strongly focussed on shoes, with a small number of shoe related accessories being sold. Shoes at the store were arranged according to sex, shoe category and brand. The layout and assortment differed between the stores, only the basic store furniture was similar.

The research project was supported by the CEO of the company and the company was very supportive in setting up the data collection. The central function interviewee, who then also managed the research project at the retailer's side, was identified by the executive management. Suitable stores to be investigated were identified by the retailer together with the researcher.



The stores were chosen for their considerable size and their location in a city that is generally considered as fashion aware and has a huge student population. The customer service employees at the stores were chosen on the day by the store manager in consultation with the researcher. Overall five interviews were conducted; two interviews each at two stores and one interview with a senior manager from headquarters. All interviews were conducted in one day. The interviewees were informed in advance about their participation in the research project. However, the store level employees did not know in detail about the scope of the research project.

#### **6.1.4.1.1 Store 1**

The first store at this case was located in an out of town shopping complex. The store opened ten hours every day, with slightly reduced opening hours on Sundays. The major target group of shoppers at this mall were young families. The store had an own backdoor through which the delivery could go straight to the backstore. The shop was opened only a few years ago. The interior was not the latest store design of the company, but fairly current. Whilst the sales area of 150 m<sup>2</sup> itself was only at the ground floor, the 180 m<sup>2</sup> for the backstore spread over two floors in the back and above the shop. One or two pair of shoes of each style was presented in the store. When the customer decided on a certain style, a CSA would get the right size from the backstore.

The store employed 30 people of which five were full-time employees. The full-time people all had management positions at the store, whilst the part-time positions were mostly customer serving positions with varying hours commitment. The part-time workforce was quite young and consisted mainly of university students.

Interviews at the first store were conducted in the morning at ten o'clock when the store opened to customers. The mall and the shop were quiet at that time. The first interviewee was the thirty-five year old female store manager. She had started her career at the company and worked her way up internally. She

managed another store for the company in the same region before. The interview was conducted at the small store office in the back, which was used by all employees for administration tasks. Prior to the interview she gave the researcher a tour around the store and the stockroom.

The second interviewee was selected together by the store manager and the researcher. The male manager was in his early twenties. He started as a customer service employee at the company before he was promoted to manager. He works at the company full-time. He was informed about the conduction of the research project in advance. As the store manager he was briefed by the researcher about the research project at the beginning of the interview. Both interviewees were very open and supportive. Despite the second interview being significantly shorter than the first one, this was not related to shyness of the employee, but rather connected to a less deep insight into the wider store operations.

#### **6.1.4.1.2 Store 2**

The second store of the retailer was the older store in the same city. It was situated downtown at the pedestrianised major shopping high street. The store opens for about nine hours every day, starting at nine o'clock in the morning; with Sunday shopping hours being reduced.

With sales space of 255 m<sup>2</sup> and a stockroom of 370 m<sup>2</sup>, store 2 was much larger than store 1. The sales area stretched over two floors, with the women's section being located at the ground floor and the men's department upstairs. The backstore was spread over several floors as well and could only be accessed by taking stairs. Also the delivery operations proved more challenging at this store. About forty cartons were delivered to the store every morning, plus a varying number of returns once a week. The building itself was part of an old shopping arcade. Therefore the only way carrying the cartons to the store by using elevators was from the lorry around the store. Furthermore, the area

became pedestrianised throughout the day. The delivery operations could therefore only happen in the morning or evening.

Also throughout their sales activities the employees had to use the stairs shuttling between their customers and the stockroom to get the requested shoes. The backstore was located on three floors, one floor for women's shoes and two floors for men's. Also the workforce was organised in stockroom employees and sales employees. The store has fifty-five employees of which six work full-time; additionally the five managers at the store have full-time contracts.

The researcher was introduced in person to the participants at store 2 by the central functions contact. The first interviewee was a full-time male customer service employee in his young twenties. He started his career at the company as a part-time sales employee during his university studies. He stayed with the retailer, changing to a full-time contract after graduating. During his part-time period at the store, he also helped out at the stockroom. After the interview he showed the researcher around the backstore.

The second interview at store 2 was with the mid-thirties female store manager. She had been with the company for almost twenty years. She managed several stores in the region before; therefore she moved stores and places frequently. Her career started as a part-time sales employee during her university time, after which she stayed with the retailer and worked her way up. She took over this store less than one year ago. Both interviews at store 2 were conducted in a meeting room situated at the backstore. The interviewees were both very open and supportive.

#### **6.1.4.1.3 Central Function**

The central function research interview participant was a senior central merchandising employee. The researcher and he met at store 1; the interview itself was conducted at the store manager's office at store 2. The participant is usually based at the company's headquarter, but visits about one store a

month. He introduced the researcher to the company's merchandising concept and market approach. The male interviewee was in his late forties and worked for other fashion retailers before he changed to his current position. Like the other employees he was very supportive and open in answering questions and introducing the retail company.

Overall, the interview lengths differed significantly. The interview with the full-time team leader at store one took twenty nine minutes, whilst the interview with the store manager took fifty two, which was about the same length as the answer from the central functions participant. The response length difference in the answers becomes more apparent when comparing the response to the first question, which was the same to all interviewees. The team leader's response was eight lines long; the store manager's answer took forty lines; and the central functions contact responded in one hundred and sixteen lines.

There are some factors that can be considered for causing the difference in interview lengths. Firstly, the researcher had some contact with the central functions participant in setting up the interviews. Although the researcher and the participant met in the morning, the actual interview was conducted in the early afternoon. Hence, there was some time that allowed trust building. Furthermore, he was also the most senior person and could be more open than the others. But much more the variation in response length might be interpreted as the level of insight that interviewees actually had in the store logistics. As most the logistics processes were centrally controlled and the store was understood as a sales focussed place, it is probably not surprising that the central organisation interviewee responded longest.

Another reflection on data collection in this case is that the interview guide was initially designed on academic literature. As mentioned in the literature review, most previous research in the area of OSA was conducted in the grocery sector. The fashion retailer in case four uses a different approach towards product presentation, and products are brought into the store from the back on customer request. Therefore, the interview guide was maybe less fitted for this case and the researcher had to use the interview guide more openly than at

other participating companies to allow interviewees to come up with insights into their operations that would not exist at grocery sector retailers.

#### **6.1.4.2 Rephrasing Interpretation Case 4**

##### **6.1.4.2.3 Replenishment Process**

Deliveries arrive at the stores five to six times a week. Almost all deliveries come from the central warehouse and are transported by a third party; there is no direct logistics interaction between the store and suppliers. However, occasionally shoes can arrive from other stores. The delivery size depends strongly on the recent sales, as the replenishment for a sold item takes about one or two days, depending on how close the store is to the DC. The deliveries contain replenishment stock, but also new styles. The store receives an electronic note prior to the delivery what to expect, but this list is not definite and the eventual delivery is in fact unknown until it physically arrives.

The delivery arrival differs slightly between the two investigated stores. Store two has its stockroom spread over three floors. The delivery is therefore split first between the according stockrooms.

Afterwards, at both stores the delivery cartons are unpacked and every item is scanned with a handheld device by the stockroom employees. The list of arriving stock is then compared by the system with the expected delivery. This comparison results in an exception list. The exception list is then double checked by a manager who is responsible for the stockroom. Unclear arrivals will have to be checked with the head office, items on the exceptions list will usually be sent with the next delivery. At the scanning of the delivery, the handheld shows whether a product is a replenishment item or a new product to the store. If it is a new style, one shoe in a small size will go to the shop floor and be put on display by the sales staff.

The remaining delivery is put at its place into the stockroom. The stockroom is organised in running orders. Every shoe carton has a sticker on it with a number code. The code can be interpreted into sex, category, colour, fabric and size. Newly arrived styles have to be fitted into the running order and space has to be made for them.

Once a week on Mondays the retailer runs a stock consolidation. For this stock consolidation the stores receive an electronic message on Fridays, which stock is going to be sent back to the central DC on the following Monday. The stores pack this stock into cartons and take the style off the shelf on Monday. It is then being picked up by the logistics provider. The central warehouse does either stock the items for the internet shop or redistributes them to other stores.

The stock allocation depends on the sales of the stores for a particular style. The higher a store is in the ranking for this style, the higher is its priority for stock allocation. Even though a style might be the best selling product for a store, it can get allocated to another store, who sells this product faster. The overall aim is to sell the product as fast as possible. Once a product starts selling faster than the stock can cover for, the number of stores stocking it is gradually reduced until only the top selling stores have it. The company plans to increase the frequency of stock reallocation from a weekly cycle to three times per week. The product is always available at the online store, as long as there is stock within the business. It is generally tried to keep most the stock in the NDC to save transport costs compared to sending shoes between stores or from stores to customers.

When a style is brought newly into the business, for the first three weeks stock allocation decisions are made manually by the merchandise department at head office. After three weeks an automatic calculation starts that redistributes the existing stock within the company. However, for extremely popular styles the company might have to reconsider stock allocations before the three weeks period is over. How deeply a product is stocked at the store also depends on the popularity of it. Usually one and a half weeks demand of stock is kept at

each store. Niche brands that are less frequently sold can be stocked with only one pair per size.

The central merchandise department knows about the stores' stockroom capacities. However, the size between styles differs; and if a store becomes overcrowded the store can contact the central function to being taken stock off.

The automated stock allocation decisions can always be overwritten manually by the responsible employee at head office. Stores can request a certain product to be listed at their store, but they have no direct influence on the decision making process of stock allocation. If stock does not sell as expected by the buying department the company will either reduce the regular price for it or put it on its biannual sale. Faulty stock and lose pairs are sold off through an online auction store. Sometimes a product can be reordered and brought back into the business. This is generally possible for the own label products, but for branded products it would depend on the supplier.

At the sales area, only one right shoe in a small size of each style is on display; for more popular lines, several right shoes in small sizes will be displayed. When a customer needs a style in his or her size, the sales assistant would walk to the backstore and get the shoe. The company sees its focus on serving the customer and therefore wants their employees to maintain personalised contact with the customers. As a consequence the sales staff does not check whether a requested product is actually in stock before they walk to the stockroom. This way sales staff can respond to a potential out-of-stock, other than only telling the customer that the item is not available.

Customers can return products to any store of the retail chain. This also applies to online purchases. The company differentiates between products that can be resold, which go straight back into the stockroom; and products which are faulty. Those go back to the central warehouse to reclaim them from the according supplier.

#### **6.1.4.2.2 Availability**

The product assortment a store gets allocated is decided at the head office. As the allocation depends on the individual sales achievements and the capacity of the stores, the assortment differs between the outlets. Some of the top sellers will only go to the top performing stores. However, all styles in the business are available through the online store and the store customer order service. Every store has a kiosk screen, through which the sales staff can access the entire business' product range and order them for customers. The customer can either pick it up in store or get it home delivered without additional delivery charges. This way the sales staff can also help customers, who are looking for a product that the store does not stock.

Only one or few right shoes of stocked products will be displayed in the store. The sales floor employees check whether all listed products are on display by using handheld scanners. Every shoe has a sticker on it with a barcode; the employee scans all displayed shoes in a section and the computer system will check whether the section's assortment is on the list. These checks are scheduled to be performed on a daily basis. The backroom availability is checked through biannual stock counts; also the central stock control can order stock counts of certain sections when necessary. The accuracy of the stock in the backroom is considered being very high. Also measures to reduce shrinkage increased the accuracy. If an employee detects a stock inaccuracy at the stockroom, central stock control has to be contacted to get the stock records changed. The store itself cannot correct those.

In case a member of sales staff faces an OOS when he walks to pick up a shoe from the backstore for a customer; he would firstly check the dead stock area. At this area the sales staff place the shoes that they picked for customers, but which were eventually not purchased. The stockroom staff are putting these back into the running order of the stockroom. If the requested item cannot be retrieved, the sales employee will bring the customer an alternative product, which can be similar to the requested style; or the requested style in a neighbouring size. The sales employee can also offer to order the requested



product either into the store or for home delivery. In about eighty percent of cases a sale can be achieved, despite the initial OOS. Most OOS occur at the fast selling lines. For the larger brands, a style cannot be brought back. Order cycles are far in advance, and a reordering is often not possible. Also, the buyers might have already ordered another style to get into the place and take up warehouse capacity and a reordering would clash with these plans. For some brands and the own label a reordering is possible though, but there can be a period of OOS until the reordered product is in the business.

The shelf life of a style varies strongly. The company is situated in the fashion business. New styles come into the business almost every day. The product turnover is therefore quite high. The buying process happens quarterly. However, it might occur that well performing lines are carried over into a new buying cycle. Generally, the company works with two seasons, at which end the company does a sales to clear excess stock. Some lines though are available all year and less affected by seasons, whilst other products are only in the business for a few weeks.

#### **6.1.4.2.3 Human Resources**

The stockroom and sales employees are organisationally separated from each other; they have their particular tasks and employees would usually not work across the two areas. The store workforce is split into managerial positions, which are all full-time; sales advisors, which are mostly part-time employees with one few full-timers. The stockroom is managed by a full-time stockroom employee, who is supported by more full-time staff or part-time employees where necessary. Most of the workforce is relatively young, with most of the part-time sales advisors being at college/university age and leaving the company after graduation. The retailer recruits for enthusiastic and fashion affine personalities and does not require formal qualifications. Employees can progress further internally and the company looks at developing its employees.

Usually, full-time sales employees already take up responsibilities and would get into a managerial role and from there further into store management. External recruitment for management position at store level is rare and is more a matter for the head office. The initial training for sales employees happens at the stockroom to understand the backroom system. It will then add sales training in store by an experienced sales employee. For management positions further training is needed and the company runs an internal management trainee scheme. Another mandatory course is needed for store management positions. Furthermore, the company runs management development training at the head office where it explains the central functions activities to store management staff.

Also, head office employees tour the regions and stores to explain the processes that are run within the company. Larger suppliers would also send representatives into the stores to give staff training on their products and support merchandising. Otherwise there is no direct interaction between stores and suppliers. To progress in managerial positions most employees would move around stores for available positions. The labour turnover in part-time positions is very high; however, for managerial positions the labour turnover is modest.

Every full-time employee in the store gets his own zone of responsibility. That is usually a section of the sales floor, where the full-timer is in charge of displays, merchandising or the window presentation. Every worker, even if only for a few hours, that comes in at a day would be allocated a certain task or responsibility for that day. Those responsibilities are written down on a whiteboard in the backroom. Store 1 would do most these jobs before the store opens to the customers, whilst store 2 accomplishes them throughout the day during the quieter hours.

#### 6.1.4.3 Reflective Interpretation Case 4

The stock distribution in case four differs significantly to other retailers due to the aim of selling out of a product as quickly as possible. The company understands itself to be in the fast fashion market and the stock is sourced in seasonal cycles in advance, a reordering is mostly not possible. Consequently, OOS are usually the fastest selling lines. Thus, running out of a product is not perceived as a purely negative event. In order to sell stock quickly the company redistributes stock weekly and is planning to increase this to three times per week. The stock allocation is centrally decided. The interviewees do understand 'ordering' as the buying activity at head office and not as a store activity. The replenishment of stores is seen as 'stock allocation', which expresses that stores have no influence over the stock that they receive. The responsibilities are divided amongst clear lines between stores and central functions. Store managers and central function interviewees can clearly explain the processes within their sphere. This can also be seen in the extended answers of the interviewees in their respective areas, whilst the answers outside their responsibility zone are short. The clear lines between responsibilities in store logistics processes also become apparent in the way interviewees talk about 'we' and 'they' in their logistics operations. The central functions manager gets from the general distribution process and store processes automatically into where the boundaries are:

*"We as merchandisers don't decide where the product placement should be. We just provide the stock. It is really up to the stores and the merchandise team to work that accordingly. So there's no direct from my side on that. The only problem you see is the store is tight on space. And for that tight of space, they make the decision to take certain lines off to accommodate everything they've got. And they really need to let us know they are doing that [...]." (4-0-1, I. 139-143)*

The store managers use the same division vice versa between head office and stores:

*“Now what the reason for that is, what they do, they look at what stock sells in what stores. If we have various styles in our store that we don’t sell. The other stores may sell, you know, two or three times as much as what we sell, then it needs to get to them stores. Rather than be sitting in our stocks. You know, we’re not selling it, so it’s wasting money.” (4-1-2, l. 60-64)*

However, it is also worthwhile pointing out that both mention the fact that both parts of the business rely on each other and the common effort is needed to make the business successful. The stores also fatalistically accept the stock allocation from the head office. The strict central control over the stock system is also indicated in the stores not being able to amend stock records. However, the central distribution and stores interact with each other and feedback and communication with stores is seen as essential and important.

*“They only problem, you see, is the store is tight on space. And for that tight of space, they make the decision to take certain lines off to accommodate everything they’ve got. And they really need to let us know they are doing that, because it is just: why, you know, basically it is stock lying in the backshop that we could be utilising elsewhere. So the communication got to be right there as well.” (4-0-1, l. 141-145)*

Stores can express requests for certain lines, but these are not necessarily followed by the central distribution. One of the store employees describes the interaction between store and central function about stock allocation in a story about a request for a line that was available within the business, but not at the store:

*“Normally we just tend to get given what we’re given. But I think from my previous experience. There was a brand on the website. And I mentioned it to my manager. And that was when I used to work on the men’s floor. And she got straight on the*

*phone to head office. And asked them if they could send us a small range of that brand. We weren't supposed to be getting it in apparently; but we asked for it, so they gave it to us. Just to see how we get on with it. So I think we can request certain stock, if we're on. Usually we're just given product that gets delegated to us."* (4-2-3, l. 81-86)

The frequent redistribution of stock and the frequent deliveries of five to six times per week may be seen as a result of the dynamic business environment of fast fashion. Trends can occur and also disappear quickly; therefore the company needs to sell as much stock as quickly as possible, as one can never be sure how long a demand lasts for. The central functions manager describes the business dynamic as:

*"[...] but in between we're a fashion business, you know anything can happen. So there's new product arriving every day."* (4-0-1, l. 128f)

Responsive processes can therefore be assumed as a fundamental part of the business success. The structured approach that the retailer takes might also originate from the young age of the business. Processes might therefore be more planned rather than being based on historic development.

All the processes are designed to keep sales floor staff free from logistics activities. Hence, the central organisation controls the product flow, but leaves the sales process itself to the store. This can be seen in the company organising the store logistics processes in which all backstores are managed in the same way.

The importance of the store logistics processes is expressed by the central functions interviewee in the statement that the backstore *"is the engine room"* (4-0-1, l. 458) of a store. The appreciation of logistics activities appears being ambivalent though. The stores understand themselves being customer service focussed. The manager of store two makes clear that the store is a sales place and does not focus on logistics. In the context of work specialisation, she refers

to the backstore as *“and it’s hard work as well”* (4-2-2, l. 227). Only a few moments later, in a context of getting skilled to run the backstore, the activity is described as *“that’s quite common sense really. It’s not hard work.”* (4-2-2, l. 242) Those contradicting statements can be interpreted as awareness that smooth logistics processes are essential for a store’s success; however in terms of difficulty it is clearly ranked below sales, which is the main focus of the store. However, to achieve this sales focus, one notices that the store processes are centrally organised to support the sales staff and to give them more time for the customers. The focus on sales therefore leads to a streamlined logistics process which has the aim to remove logistics effort away from sales staff to central functions and to specialised logistics employees in the store.

The centralised stock control benefits from high data accuracy that is achieved through several factors. In opposition to many other retail stores the customers do not have direct access to the product, as all items apart from display shoes are stored in the backstore and not at the sales floor. A sales employee gets a required pair of shoes for the customer from the back. Also all incoming items are scanned and so are all sales. Additionally, the company runs complete stock checks twice a year and also does random stock checks of a limited amount of stock in between. As a consequence, stock records do not need to be adjusted frequently, and the control for adjustments can be kept at central level. The communication for stock record changes happens on a case by case basis between store and central stock control. The high level of central control however can be seen as a requirement for the rapid and frequent stock redistribution.

Throughout the interviews, the term out-of-stock is understood differently from grocery based literature. OOS can occur in two varieties, in one a listed shoe is not on display; in the other one a displayed shoe is not in stock either on store level or it is unavailable in the entire business.

The first alternative is kept under control by regular checks of the sales floor. The applied handheld scanners compare a list of stocked products in a

department with the products scanned by the employer. This way each department of the store can easily check their displays. The task is scheduled daily, but it is not a top priority. The second alternative occurs when a customer asks a sales person for a certain style and size. If the item is not available at the backstore, the employee can select an alternative size or style and offer this to the customer. This does not only give the chance to recover the sale, but is also perceived as providing better customer service. Sales staff can also order products for customers, in which case they can access the entire business' stock. Hence, as long as one item is somewhere within the entire business, it can be made available for the customer. To offer this service to the customer, the stock data needs to be accurate across the entire business. And although the home delivery to the customer of an item that is not in the store adds costs, the company sees this as part of its customer focus. According to one of the store managers (4-2-2) about eighty percent of potentially lost sales can be recovered by offering the customer alternatives or special order. It can further be assumed that customer disappointment is avoided through this and therefore has a positive impact on future sales. All along the process of serving a customer, the shop floor employee can interact with centrally controlled systems, which is essential for the desired customer service provision.

The accuracy needed for the logistics processes is accomplished through the specialisation of the store workforce. Backroom workers are dedicated to their area and are separated from the sales workforce. In sales only managers and very few other employees are employed full-time, whilst the majority of people work part-time. The part-timers receive limited training in the store, whilst for the full-time employees a development programme and training courses exist. The backstore is maintained by one or more full-time employees and a manager is dedicated to the backstore; hence it perceives the same hierarchical recognition as the sales activity. Nevertheless, employees progress in their career internally through the sales path, which again underlines the focus on sales rather than logistical processes. Despite the clear division of sales and logistics operations, the two functions interact constantly through systems and also in the stores through direct contact.

### **6.1.5 Case #5**

#### **6.1.5.1 Case Presentation**

The fifth case in the research study is a UK convenience grocery retailer. It runs several thousand outlets of different size across the UK. As the company took over several competitors in its recent history, it also runs stores which size would make them being considered supermarkets rather than convenience store. Nevertheless, the company considers itself of being in the convenience sector. The integration of acquired stores becomes an issue throughout the interviews. Particularly, as the company is on the way of adapting a new distribution system that is based on the systems run at one of the acquisitions. Interviews often make comparisons between previously experienced systems and between 'old' and 'new' system. Even though the researcher focuses on the currently operated system, the participants were not stopped from making comparisons between the systems.

For the data collection the company selected two stores in Yorkshire, which are both regarded as convenience stores. The company also selected those two as they are of significantly different size and therefore have different issues regarding replenishment.

Due to the convenience format, most outlets would be relatively small and operate with a smaller number of employees. Caused by this smaller format, it was realised throughout the interviews that the store manager covers the roles that a department or deputy manager would cover in the cases of the investigated hypermarket retailers. As a result, the store manager interviews at this retailer took about double the length than at other participating retailers with larger stores. Correspondingly, it was decided not to conduct interviews with customer service assistants at these stores, as the store managers had already covered their shop floor activities down to customer service assistant level in the interviews. Furthermore, the initial agreement of required time resources at



the stores was already overstretched after the store managers' interviews and the achieved insight was quite deep.

Access to the store operations was provided by senior management of the retailer. The two stores were selected by an area manager, who perceived the stores as giving a good example of the store operations; furthermore he considered the store managers as very knowledgeable about the company's operations. Both stores are situated at an English market town. Store one is a small city centre convenience shop; store two was recently taken over from a competitor and was located at the main street into the town in a purpose built store. Despite of its supermarket size, store 2 was classified as a convenience store with most customers doing top-up shopping. Generally, the company is operating in the midmarket area. The retailer recently took over several smaller competitors and was still in the process of integrating some of them. It was therefore considered sensible to choose an established store and a new store for the study.

#### **6.1.5.1.1 Store 1**

The first store in case five is located at the town's market place, surrounded by little speciality retail shops. Even though the store is located in a town, it is in a rural area close to a larger city. The company categorises the store as mid market. Due to the historic setting and constructional reasons the store has hardly any opportunity to expand its space. The turnover at the store is very high considering its small size of only 158 m<sup>2</sup> sales area and 9.5 m<sup>2</sup> of warehouse space. The store employs seventeen people in total, of which seven are full-time employees. The store receives frequent deliveries as there is hardly any space to stock products. During the store visit a delivery arrived. The employees unloaded the cages and put the boxes away manually to utilise any available space. Roll cages cannot be brought into the store.

The interviewee at this store was the store manager who was in his thirties. He came from a non-grocery retailer to the company and joined it as an assistant

manager. He also went through a training programme at the company. The interview was conducted on a Monday morning shortly after the store opened.

#### **6.1.5.1.2 Store 2**

The second store at the retailer was at the same town as store one, but situated on the main road on the edge of the town. The store belongs to the larger stores of the chain with 1,400 m<sup>2</sup> sales floor and 280 m<sup>2</sup> of warehouse space. The site was taken over from a competitor. Despite its size the store is operated as a large convenience store. The turnover of it reduced, compared to the previous ownership when it used to belong to a supermarket chain. The store employs sixty people, ten of them full-time. However, the store manager states that it is understaffed at the time. As at the first store, full-timers are usually the supervisors and store management. In contrast to the first store, this store also runs a deli and fresh meats counter, and has a little cafe within the store. Despite its larger size, deliveries arrive as frequently as at the smaller store. The store has a backstore space and chilled backstore areas, and the amount of inventory is much larger.

The interview was conducted with the store manager, who was approximately in his fifties. His career brought him through several independent retailers and retail chains. He had also managed a significantly larger store before, and a takeover brought him to his current position. The manager's experience led to many comparisons with previous systems and retail settings. Therefore, the interview was the longest in the entire research project. Like at store one, further interviews with customer service employees were renounced, as the store manager was very much involved with the shelf operations.

#### **6.1.5.1.3 Central Function**

The interview with a manager from central functions was conducted at the company's headquarter. She was identified by the retailer as the most suitable interview partner, as store operations are organised by several players within

the organisation. The interviewee was a thirty years old project manager at central ordering. She was interviewed at her department in a type of meeting booth which was located within an office floor.

As the company is reorganising its ordering, the interviewee makes many comparisons between the current system and the planned system. The new system is taken from a recently acquisitioned retail chain. Although she is not directly involved in logistics activities, the project manager has an insight into most store operation processes. Due to the upcoming change in the system and the friendly culture at the company, the interview took considerably long and went into much detail. The manager came to her central position from an acquisitioned small retail chain. She was also involved in the training of store personnel and store management, and therefore has an insight in store processes and requirements.

All interviewees were extremely open and helpful. There was no hesitation or intimidation to answer any questions. The length of the interviews results from the friendly atmosphere, but also from the fact that the upcoming change of systems encouraged interviewees to chat about two systems and to make comparisons between them.

As the interview guide was based on previous research in the grocery sector, the questions and terminology fitted the interview situations quite well. The interviews were set up through a senior management contact in the company.

#### **6.1.5.2 Rephrasing Interpretation Case 5**

##### **6.1.5.2.1 Replenishment Process**

Stores at the investigated retailer receive deliveries from two DCs: the local DC, which stocks fast moving lines; and the NDC from which slow movers come. Both streams are consolidated at the local DC, so that the store receives the deliveries in one load. Temperature controlled deliveries arrive separately, so

do deliveries from direct supplier such as bread. Despite the two stores being of very different size, deliveries arrive at about the same frequency.

The different store size and the available warehouse space led to differently organised replenishment processes at the two stores. The smaller store 1 has almost no backstore space. Delivery cages are unloaded at the backdoor and the product boxes are brought in manually. The products are hereby separated into urgent and non-urgent products.

During a previous store check the employees made a list, which products are OOS on the shelf or running very low. These products are put on the urgent pile and are replenished straight away after the unloading process is finished. Non-urgent products are stored in the back. Throughout the day employees regularly check the shelves and identify products that need to be replenished.

Supervisors at store 1 would check the aisles at every shift takeover throughout the day. They then make a list of products that need to be refilled and get those products from the back. Store 2 on the other hand drags in full delivery carts from the DC delivery when they arrive in the late evening. The replenishment does not happen until the next morning after the shelf gap check was conducted.

The cages are not prearranged to categories. Therefore the employees at store 2 unload the cages and arrange carts according to the replenishment areas. Replenishment starts with products that are on promotion, as these are at a higher risk to be OOS. Employees will also know from the prior gap check, which products need more urgent replenishment and would prioritise fast sellers that are OOS.

The ordering process at the company is run through an automated system that suggests order quantities based on the shelf profile, stock records and average sales. Once the stock levels at the store fall below a defined level, an order is automatically generated for the required product. The ordering is done manually for weighted products, e.g. fruits and vegetables and meats. The system does not consider promotions in the category and demand changes due to these

promotions. The store can amend the order suggestions as it pleases. The stores can order from an overall company-wide catalogue of sixty thousand SKUs, whether the product is profiled at the store or not.

The presentation level at the store (the level to which a product is stocked up to) is the available space on the shelf for smaller stores, and double the allocated shelf space at larger stores. The presentation levels however can be amended by the store so that the ordering system automatically constantly keeps more buffer stock for a product in store.

The average sales figure for the order calculation uses an eight weeks average. In case of drastic weather changes the head office will both inform the stores of those and give them recommendations on their order behaviour or it will push stock into the stores. The stores are informed about the inventory push. Promotions are centrally decided. The promotions apply nationwide; however stores might have offers that other stores of the same chain do not provide due to their size and the price band they operate in.

The ordering system will be significantly changed at the company in the near future with the head office taking entire control of stock distribution. The stores will not be able to interfere with the automated orders at all but merely make sure that inventory records are correct.

There are hardly any reverse operations from the stores back to the DC. Products that are at risk to hit the end of their shelf lives are reduced in price by a store employee, who is responsible for the checking of those dates and the according price reductions. Only large incorrect orders would be sent back to the DC. Products that are overstocked at one store are occasionally redistributed locally by the regional management or store managers between stores. The stores can access the stock records to adjust the books accordingly.

#### **6.1.5.2.2 Availability**

The shelves are checked for OOS doing a so called gap check. This gap check is conducted by optically checking every shelf and by scanning empty shelves and low stocked shelves with a handscanner. Store 1 does this gap check one or two times a day, store 2 only does a weekly store wide measure of OSA.

The registered gaps are then investigated for their root causes and appropriate actions. The employees can use the handscanner to look into the order history of a product and to control the stock that is booked on the system. If possible, the cause is resolved at the store. Incorrect stock records are amended and orders might be increased to respond to these gaps. All supervisors and managers at the store -plus a number of shop floor employees- are authorised to make these changes on the system. It may also be that the shelf just needs replenishment from stock in the backroom. In case of an OOS the stores are not filling the gaps with another product, but keeping the shelf empty.

Whilst the stores see the reasons for OOS mainly in demand peaks caused by weather changes and in promotions, they also mention incorrect deliveries from the depot and human error at the store. The head office interview mentions the inaccuracy of data due to a lack of conducting sufficient gap checks; and also the interference of stores with the ordering system.

The gap check is performed in the early morning before the store is replenished with the incoming delivery. The OSA performance is calculated and communicated to the employees on notice boards in the staff area. The performance figures also include the items that are not deliverable from depot. The head office has set several requested checks and procedures, such as stock reports and inventory checks. However, it has no lever to control whether the stores are actually conducting them. Head office considers these checks as essential to keep data records accurate. The data accuracy affects the functioning of the automated ordering system. If store managers change orders they can only correct one single order, but the system might still be running wrongly if the database is not accurate. The system further suggests extra gap

checks when the stock numbers or sales for a product are outside the usual pattern.

Store 1 also runs a routine for stock counts. It follows a set schedule to conduct stock counts for a category depending on the data inaccuracy risk through shrinkage. One reason for the schedule of routine stock counts is the consideration that too high stock levels cannot be detected by the gap checks.

The company has the 'top five hundred lines' that enjoy particular attention for product availability. These lines are closer monitored by the head office and higher buffer stocks are set for those. The lines are selected across all categories. These lines also get higher priority in the replenishment operations, and their shelf labels are marked discretely marked.

The shelf space is allocated by the head office in negotiations with the suppliers. The shelf plans are set by the head office and the stores are controlled for sticking to them. The shelf plans are also constantly updated, which can be a reason for an OOS during the gap check, if the automated ordering for a product stopped, but the store has not updated the shelf yet. At the time the interviews are conducted, the stores have some flexibility in the shelf plans. However, this system will be changed to a more centrally controlled approach, where the stores do only get products that are profiled for the store. The profiled assortment will mainly be given by the head office, but the store can decide for few lines, such as regional options, which item it wants to be stocked.

At both stores the till operations are prioritised over the replenishment activities. Although there is a main replenishment push in the morning, the replenishment is happening all day. When employees are available they check areas of the store for products that run low and replenish these from the back if the product is there. At store 1 each employee is responsible for a certain area of the store; at store 2 most employees are not allocated to a certain area but everyone looks after all areas, priorities for replenishment are hereby set according to how tidy areas appear.

#### **6.1.5.2.3 Human Resources**

Employment qualifications for staff at both stores are based on customer service skills and attitude, less on formal qualifications. Employees also need to be available for the certain time slots that they are recruited for. All staff below supervisory level is employed on a part-time basis. Store 2 recruits some positions for a certain amount of hours to conduct a specific task at that time; hence the employees need to be available for these time slots. Few tasks, such as the shelf life check, however can be executed at any time. The store manager allows the persons on these tasks to work when they want, as long as they fulfil the task.

At store 1 the employees can be used for the replenishment of any area of the store; however everyone has a dedicated area that he or she is responsible for. Store 2 used to allocate employees to an aisle; but stopped this system when it downsized. Now everyone looks after all areas of the store, wherever people are needed. At both stores, the employees work at replenishment and at till operations. The checkout operations enjoy priority over the replenishment. The stores aim to multi-skill their employees so they can use them flexibly for more tasks.

New employees get an induction at the regional head store. They are also trained at the store itself; and they will also get send to stores that are particularly good in a certain aspect where the employee needs training in. The ongoing training is individualised and the workforce's training needs are reviewed regularly. Future store managers are selected by the regional manager among store employees. These candidates receive extra training to get prepared for a position as store manager. Usually they work their way up. However, the company also runs a graduate scheme, where future store managers are trained at head office and stores, before they become deputy and then store manager.

The labour turnover is considered being low. Experience and the workforce consistency are seen as an advantage to run store operations smoothly. Store 2



also expresses a preference to keep a position vacant rather than filling it with an unsuitable person. Even though the store does not find it difficult to recruit staff generally, it experiences difficulties to get the right people for the specific time slots. Currently the store manager gets a payroll budget depending on the size and turnover of the store. In the future the company plans to evaluate the required jobs at the store and schedule them centrally.

#### **6.1.5.3 Reflective Interpretation Case 5**

The largest difference in replenishment operations between the two stores arises from their different constructional situations, particularly the availability of backstore space. Whilst store 1 needs to plan the upcoming replenishment before the delivery actually arrives; store 2 can drag the cages into its backstore and take care of the shelf replenishment the next day.

As a consequence, the arriving goods are divided into urgent and non-urgent straight away at store 1. This separation is not much extra effort, as the delivery has to be brought in manually by the individual case anyway. The much larger store two with an accordingly much larger assortment brings in mixed cages, and then firstly needs time to sort the mixed delivery between the departments. The manager at store 1 is also aware that other stores will run their replenishment differently. The constraint of very little backstore space may even be considered as an advantage in a sense that there is no back up stock and shelves, and IT stock records have to be maintained properly. Also the smaller store size allows keeping the store shelves monitored and communication can be done informally between the employees.

At Store 1 all shelves are checked for gaps several times a day, whilst store 2 does only perform these gap checks once a day before the ordering happens. Due to the larger assortment and delivery volume store 2 can only identify that items were incorrectly picked at the DC when shelves run empty. Probably due to their different store situations, they have very different perceptions of the ordering system at the company. Both interviewees allocate a great proportion

of their interview time to the store ordering system, which may indicate that it is central to their everyday store operations. Store manager one sees the reordering process mainly as a matter of maintaining correct inventory records to allow the IT ordering system to function properly:

*“And you know, you’re constantly reviewing orders. We order now for Wednesdays [interview on Monday]. So we’re trying to guess, what we’re gonna sell. But it’s on the sales as well. Everything’s worked through average sales. We also set a profile, so what would make your shelves look full. So in theory the computer system will always order before you run out. [...] But generally speaking the system is put, embedded in track with the sales. It’s also factored in promotions. So it knows when we have a promotion. You know you sell double on that. [...] So therefore it would pick up, what current stock you have in store now. And then reorder accordingly. We have a chance at the minute, so we order on top of that as well. So we go around and like today I’ve gone around, done a check on what I need to order in for Wednesday. Hopefully the computer picked it up. Where it hasn’t, we would be looking at why it hasn’t picked it up. See is what’s gone wrong. A cross-pick that’s come in or whatever issue is to deal with it.” (5-1-2, l. 23-38)*

Store 1 relies on the central ordering system and doesn’t make a statement that would stand in opposition to the system. Store 2 sees more need to amend the automatically generated orders:

*“That’s basically how the stock works. But unless that, that and that are accurate, you either have no stock there or you have too much stock there. So obviously, the larger the store, the more intense, the more work there is to do.” (5-2-2, 127-129)*

*“So all them ones they’re all suggested. So they’re all the ones that we can impact now. We don’t have to impact them. We can leave them and it will send stock in, based on book stocks, the*

*MPLs [minimum presentation levels] and what it forecasts. So generally, if we didn't do anything, we wouldn't look too bad. It would send in stock. Not necessarily always the right amount of stock, because there could be some book stock issues there.”*  
(5-2-2, 134-139)

Although in essence they both do the same tasks to maintain the stock records and see the importance of it, the perception of the system is more critical at store 2. The topics of ordering system and product availability are hereby seen two factors that affect each other.

In a statement regarding product availability, store 2 again refers to the different store size and its effect on OSA:

*“But because of the large size of the store. Again, this is where people say: oh well it's easier; or it isn't easy. Cause we stock a lot more range, if there's availability issues, it's gonna affect me more, than it will a small store. Because we can put plans in; I give you an example, we put the ready meal plan in, ethnic sauces; what is it, Domino sauces, pasta sauces. We put that full plan in, twenty two gaps, from doing the plan. So the plan was live; so effectively all that stock should have been available to me. I have twenty two. [Store One] probably had two. So it's not a big thing for him, well I have two gaps. It's out of stock at depot, it's not major. Twenty two gaps for me, it's patchy all over and you think: it's not right.”* (5-2-2, l. 405-412)

Again the store size is put forward as a main difference that affects product availability. As store two mentions the disadvantage of a larger assortment extensively, one might assume that the replenishment system is designed with a focus on smaller stores, which would fit into the self-understanding as a convenience retailer.

The central function takes another perspective on the current ordering system, and how the incorrect use of it may lead to OOS:

*"[...] they will not bother to do a gap check or any of the routines that we've got behind that. They will just look at that order and they'll go line by line, from their own personal opinion of what sells in their store; starting fiddling with it. [...] What they don't realise is that for every time they manipulate that order, the next order generates, it compensates for what they did. [...] So forever in the day, until they're correcting that issue, whatever were wrong in the first place, it will automatically carry on generating it. So for every day, unless they fix it, they're spending numerous hours, correcting that system order."*

*(5-0-1, l. 62-72)*

In her understanding, the incorrect use of the ordering system leads to problems at the stores. That the ordering system is designed for smaller stores can also be seen in a central function statement that products should always go straight on the shelves and that the warehouse is only for promotional items (5-0-1, l. 159).

The central function manager sees the lack of central control as the main cause for availability problems. In a new system decision making will be moved from the stores to the headquarters, which the interviewee describes as "standardisation" rather than "centralisation". Despite the wording, store managers will have to deal with a mainly fixed assortment and even work schedules for the stores will be centrally given. It occurs that the retailer is shifting from one extreme, where the company has little grip on what is really happening at the store, to another extreme, where the central controls most of the operations. The change might be supported by a change in the organisational structure from a loose organisation with often independent local retailers to a retail firm that owns and runs most stores itself. With that change in organisational company culture, the power in the supply chain changes and consequently the processes too.

## **6.1.6 Case #6**

### **6.1.6.1 Case Presentation**

Case six of the research project is a UK retailer that sells a wide range of non-food products through its stores and its distance retail business. The shopping process at the stores is organised very differently from the customer experience at traditional retail store concepts. The customer has no direct contact with the product before the purchase. The shopping starts with selecting the desired products from a catalogue and paying for them before picking up the products from a counter. Untypically for retail stores, most the space at both visited stores is occupied by the warehouse area to which customers have no access. The sales area is much smaller and only contains few products that were put on display for promotion purposes.

The company runs several hundred stores all across the UK. It applies several formats of retail stores. The stores that were visited for this research project both belonged to the largest format the company uses. Overall, the retailer applies seven different categories for store turnover, with now only few in the highest band due to the opening of new stores. Although it generally divides between high street stores and retail parks, the number of SKUs varies with the store size, and the stored products are individually accustomed to every store's sales data and storage capacities. The assortment at the retailer is vastly changed twice a year when the distance retail catalogue changes too. The company considers itself serving a wide span of customers, but mainly the lower middle of the market. It sells products from branded manufacturers but also offers own labels.

Access to the company was negotiated through a senior management contact within the company. As the company's supply chain is organised along the process flow, the right interview partners for store processes were identified

quickly. The visited stores were selected by the central function interview contact.

#### **6.1.6.1.1 Store 1**

The first visited store is in the retail chain's top ten stores for sales turnover. It is based in a retail park on the outskirts of a large city. The store consequently belongs to the larger ones in the company. It has 290 m<sup>2</sup> sales space and about 1,300 m<sup>2</sup> warehouse space in the back and at the first floor of the building, which contains up to 450,000 items during the Christmas period. Usually the store's assortment consists of about 17,000 SKUs.

The store employs 44 workers, of which only the 9 team leader and manager work full-time, the rest have part-time contracts with flexible working times. The location and the working time flexibility is seen as a main contributor to the 30% labour turnover rate, which is considered relatively low. Over Christmas, which is by far the busiest period for the retailer, temporary workers are hired and the number of workers can rise up to one hundred. However, these temporary employees are not considered in the labour turnover figure.

One interview was conducted with the 30 years old male stockroom manager and the end forties female store manager. Both progressed internally to their current positions. The atmosphere at the store was very friendly and supportive. The interview initially started only with the stockroom manager at the store manager's office. After a few moments the store manager joined the interview. The researcher intended to interview them separately after double interviews were experienced as hindering the interview flow in previous cases. However, due to the situation it became impossible to suggest such without being rude. Therefore the interview included both interviewees at once. In this case the participants stimulated and added to each other's responses. The double interview proved to be a positive influence on the interview flow, much in opposite to the previous experience. It is hard to extract why this happened, but one can state that there was a high level of trust between the two interviewees,

who also worked alongside each other at this store for some time. It also added value to the interview in a way that the stockroom manager took a more product flow perspective whilst the store manager considered customer behaviour stronger.

#### **6.1.6.1.2 Store 2**

The second store visited at retailer 6 was at an inner city shopping mall with car park access. It was considered being in the high street category but had some assortment adjustments due to the accessibility by car. Like the first store, store 2 was in the largest store format the company runs. The store had a sales floor of 340 m<sup>2</sup> and warehouse space of 1,220 m<sup>2</sup> to stock about 15,000 SKUs. It was newly opened less than two years before the interview was conducted.

Due to the location in a shopping complex, deliveries at this store were unloaded at a ground floor bay that was shared with other retailers at the mall. The stock then had to be brought up to first floor, where the backstore entrance was located.

Like the first store, this store was friendly and supportive. The stores only knew about the general area and reasons for the research project and they were keen to explain the processes that were happening at their stores. Interviews were conducted with the both male stockroom manager and store manager. The stockroom manager, who was in his forties, joined the company from a small men's fashion retail chain. The store manager was slightly older; he came to the company from previously working as a supermarket manager.

The store employs 36 workers, of which the nine team leaders and managers are employed full-time. As the first store it also uses a large number of temporary workers during the Christmas trading period.

#### **6.1.6.1.3 Central Function**

The interview with central functions was with a male senior manager in his end forties who was in charge of store operations. The supply chain at the retailer is organised according to the different processes that occur in the retail environment. The interview participant was in charge of store logistics operations and replenishment activities.

The interview took place at the company's headquarters in an open meeting area. The interview itself was the shortest of all central function interviews, mostly due to the interviewee's efficient attitude. It took some time to get into a more relaxed conversation mode. Although the company supported the research, the agreement was derived through another senior manager and the interviewee's initial behaviour could be described as cautious. The interviewee also scheduled less time for the interview than at other participating retailers and the general environment at the headquarters was generally less inviting than at other companies.

#### **6.1.6.2 Rephrasing Interpretation Case 6**

##### **6.1.6.2.1 Replenishment Process**

Deliveries to the store are combined from three different warehouses in the company. Deliveries are scheduled in relation to the demand at the two stores where the interviews were conducted. Deliveries arrived five times per week at store two, and six times per week at store one. Store 1 usually receives full-truck load deliveries, which is usually not the case at store 2. The stores are told a two hours delivery time window the day before the delivery is set up. They schedule their human resources for product put-away according to these time windows. Deliveries are meant to prepare the store for the forecasted demand of the next day. They are therefore larger before a weekend. The deliveries arrive in roll cages at the stores. The products in the cages are mixed and



products are put together in consideration of picking efficiency at the warehouses.

The deliveries include five priority cages, which contain mostly products that were ordered in for customers, are OOS at the store or represent fast selling items. After these five cages, the stores shall put away delivery cages from the NDC, as the lead time for these products are longer; eventually they are taking care of the remaining cages from the RDC.

The only manual check upon the arrival of a delivery is to compare the number of cages with the delivery note; checks for accuracy on item level are automatically performed by the voice put away system. The voice system allows the company to store products in random locations in the back of the store, as for put away and picking the automated systems will tell the workers the location they are looking for. Previous to this system, the company needed to teach its workforce a product category based backstore system.

The backroom storage system is organised in two zones: products at easily accessible heights close to the customer contact point, where fast moving items are stored; and the remaining area for slow moving products. The allocation to a certain zone is decided at the head office. The store is provided with the product dimensions, which zone it belongs to and the expected number of stocked items. Based on these figures, the store's stockroom manager allocates shelf space to the products. This space allocation is reviewed twice yearly when the assortment changes. The sales frequency is based on company-wide figures. If a product is considered as a slow mover but sells very well at a certain store, the stockroom manager can move the product to a fast moving storage location. It is very rare that a product is forecasted into the wrong zone. The head office knows about the storage capacity at the store. However, it occurs that the stores are receiving a lot of stock if the central is sure that they are sold. For example ahead of promotions and seasonal peaks stock can be pushed into the stores, which has to find space for it. The company can also centrally see shelf locations and stock levels for all items at the stores.

The stock levels at the store are set by the head office based on historical sales data. If a product is newly launched, the company looks at the store's performance in that certain category to predict demand levels. Many products are not stocked at all at a store, but will only be delivered in for a customer order. Those products that are stocked at the store are replenished based on what is expected to be sold at the next day. One stockroom manager describes the system as 'just-in-time', with the stores holding as little unnecessary inventory as possible. The inventory levels are daily reviewed and adjusted to next week's forecast. For products that are expected to sell at a frequency of less than one, the company would decide whether it wants to invest into a certain product or if it gets only send in for customer orders. Generally, the company aims to rather keep stock of low sales frequency at the DC and not at store level.

When the demand exceeds the available stock in the business, the head office would still allocate it in accordance to the likelihood of sales, which means that stores with higher sales get more products. However, the head office can also interfere in this automated stock allocation to make sure that every store gets at least a certain amount of the product.

Every Sunday, stores receive a list of products that they need to send back to the DC. This can be items that the store carries too high stock levels of or that are needed at other stores. Stock transfers between stores happen very rarely, as they are processed through the regular distribution network and therefore cause additional effort. Transfers through the distribution network are only done for products above a defined value. It happens that stores transfer stock between each other locally by car. This is arranged on a local level between store managers. All stores have access to the entire stock records of the company and can see the inventory of their neighbouring stores.

Much stock is returned to the DC at the time of an assortment change. Twice yearly a lot of the assortment is changed and some discontinued stock is returned to the DC and in many cases returned from there to the supplier. However, the retailer puts many of them on sale to avoid the return procedure.

Broken products that are returned by customers go through an external repair facility, which also takes care of the product being picked up at the store; these repairs do not go through the retailer's internal distribution network.

#### **6.1.6.2.2 Availability**

The assortment and inventory a store keeps, depends on the storage space and the demand at the store. Every store has an individual product mix, which is based on history data and demand. At the sales area of the stores are gadgets where the customers can check whether the product they are looking for is in stock at the store. If it is not in stock, the system takes this into consideration for the calculation of the 'demand'. The same happens at the till, when a requested product is not in stock at the store. The company measures the level of 'serviceability' which is understood as the percentage of requests that could be satisfied from the store's stock. This figure is usually at about eighty percent at the two stores, but drops significantly during the Christmas period.

The main reasons for these out-of-stocks are demand peaks for a certain product, e.g. when a product becomes very popular for Christmas, or when a product is newly launched. If a product is in stock at the DC, it can be ordered in within forty-eight hours.

About thirty to forty percent of sales at a store were previously ordered by a customer either at the store, via telephone, or online. There are always many SKUs that the store itself does not stock, but that are presented to the customers through the catalogue.

The serviceability measure allows the company to calculate the lost sales. The head office can see serviceability measures by line and store and can hence identify lines that cause trouble and review their inventory setting on the system. In the rare occasion that a product is often OOS at the store and the central function does not fix the issue, the store has the opportunity to contact head office and raise the topic. Store 2 was opened less than two years ago and the system had little history data in the past. It contacts the head office about stock

issues about twice per month. However, the adjustments of inventory decisions reduced over time with the availability of history data in the system.

In the retailer's concept, the customer pays at the till before he receives the product. It may therefore happen that such a product is found to be OOS at the collection point. Such an OOS occurs only once every 7,500 sold items. To prevent this customer dissatisfaction the company runs several routines to check that stock records are accurate.

The voice system automatically checks the products that are put into the backstore against the record. During picking operations the pickers are told to count the products on the shelf when the stock record falls below four items. In case the record on the system disagrees with the present stock, the picker notes this to a manager, who can then search for a missing item or eventually adjust stock records.

The stores also go through a stockcheck routine. Twice yearly the entire stock is counted, another two times fifty percent of the stock and random checks can occur occasionally in between. These checks are undertaken by employees who are brought in from the central function.

A main source for inaccurate stock records is theft. As a consequence high value lines are counted weekly and products that are displayed to customers in the store are counted weekly too. In case an OOS at the collection point happens, the response is to the store manager's discretion. A store manager can for example offer a substitute at a discounted price or offer free home delivery for the item.

Promotions are centrally planned and offered nationwide. The store receives a planogramme which products to put into the customer area. If the store runs out of a product, the planogramme has two substitute suggestions. Only if all three run out of stock, the store can decide what to put in the sales area. This substitute would be chosen from the same category as the initially promoted item. Stock for promotions is calculated in the same way as inventory allocations for regular stock. The stock for promotions is pushed into the store.

The inventory for promotions is gradually built up and the store can see from the arriving stock, what products are going to be on promotion.

#### **6.1.6.2.3 Human Resources**

Store employees are getting skilled to generally work at any job in the store. Jobs can face the customer or be situated in the stockroom to pick and put away items. The workers that put away deliveries via the voice system are the only workers who have a dedicated position. All other staff rotates between jobs in the store facing the customer and in the back.

People being skilled to work at any place in the store allows the store flexibility in terms of shift scheduling, but also to allocate staff to a certain piece of the shopping process in line with customer flow. Store employees can easily help out at other places in the store when a flow of customers peaks there. Workers would not have a position in the store where they always work. Employees swap around the positions. However, people's skill levels are evaluated and fed into a computer system, which then allocates the store's human resources. The better skilled an employee is in a certain field, the more likely it is, that he will be selected for it.

The staff hours that a store is allowed to spend is based on the forecasted turnover for the store. When sales pick up the store can put on more staff for these periods. As the main trading time for the retailer is the Christmas period, it takes on temporary workers during this time.

Many employees have once started as a Christmas temporary worker and stayed on afterwards. Also supervisory and management roles at store level are often filled from within, as employees progress within the company. The initial recruitment looks for attitudes rather than retail experience. Assessment centres, which are prepared by the head office, are held at the stores to identify suitable candidates. These assessments look mostly for customer interaction and customer service attitudes.

The retailer also requires time flexibility, as workers do not have a fixed shift pattern, but are scheduled differently each week according to demand. Many shifts are announced at short notice and demand fluctuation may require extending shifts. As wages are the biggest cost factor for the retail store, it is tried to keep these costs down to a minimum.

All employees but the supervisors and managers at both stores have only part time contracts of a maximum of fifteen hours. Therefore, employees often leave when they have the chance for a full-time employment somewhere else. The labour turnover at both stores is at around thirty percent, but it is considered that the economic circumstances limit the availability of alternative employment opportunities.

New employees get an induction and are educated into how the stockroom and how the stock system works. The amount of training everyone receives depends on the knowledge level they need. Most training is done by using a computer learning programme. The setting up of a new employee on the delivery put-away voice system takes half an hour, after which the worker is enabled to work with the system.

#### **6.1.6.3 Reflective Interpretation Case 6**

The business model and the resulting store processes at this retailer are run considerably different from a more conventional high street retailer. As the customers do not have access to most of the stock, the backstore area takes a much larger proportion of the store space than at a traditional retail store which also results in more attention towards processes. It also affects the storage system, because the company does not have to consider product categories or consumer walkways when it comes to storage locations. The storage system at the backstore is much rather comparable to a warehouse system, with a focus on optimising the efficiency of picking and put-away operations. Strong indicators for this warehouse mentality at the backstore are the usage of the

voice system and the application of different zones for fast and slow moving products.

As the retailer's store concept charges the customers before they receive the products, it is of paramount importance not to disappoint the customer when they collect their products. As the main source of such an experience is the inaccuracy of data in the system, measures to ensure data accuracy are seen throughout the process flows. The voice put-away system checks the arriving delivery against the delivery note, large stock counts are conducted several times a year, and a process is installed that pickers check the remaining number of items when the stock for a product falls below four items. Also lines with a high risk of theft, which are usually high value lines and items displayed at the sales area, are counted weekly.

With the vast bulk of stock being not physically displayed, a main source for data inaccuracy -theft- is vastly reduced. The high level of data accuracy is also needed for the central allocation of stock and the required stock visibility. Stock is delivered to the stores based on the forecasted demand for the next days. One stockroom manager states:

*"It's not meant to be on the shelves very long. When they come off the van on the shelf and will be sold. [...], it's dead money to sit on the shelf, isn't it? So that's the stockroom philosophy. You just have it just in time." (6-2-3; l. 103-105)*

This lean stockroom philosophy relies on accurate data in order to allow a central forecasting and stock allocation. The retailer hereby has the advantage that thirty to forty percent of the sales are actually ordered by customers before they come to the store to shop. This way a huge amount of demand can already be predicted.

The reliance on the central system can be seen at store 2, which was newly opened. Only over time, and the according generation of sales data, the system became more reliable and frustration at store level reduced. As the system automatically allocates stock and defines the assortment, the store itself cannot

influence these at all, which may be assumed to increase frustration once this system does not function in accordance with the shop's real requirements.

The visibility of data does not only give the central organisation control, but also increases control for the stores at the same time. Stores can access available stock and reports. As a response to a question about stock discrepancies, one stockroom manager accessed his computer and presented the number of discrepancies that occurred in the last month straightaway.

The access also benefits the stores, as they can see whether neighbouring stores have products stocked that they need. They can also order products into the store for customers, for which they need to know whether stock exists within the business.

To keep records accurate store management can correct stock records directly. Control over product flows is hereby not only empowering the central function but also the store. Despite the high data visibility, the head office accepts in the structuring of its decision making that some decisions should be made at store level. The head office interviewee expresses this in his explanation how the backstore shelf space allocation is executed.

*“Researcher: So would you know at which place a product is stored in the store?”*

*Participant: [...] I can dial in into every single store system in here and tell you where a product is. I can't do it very quickly. So if you wanted to say: Tell me where this kettle is, in this store, I could do that. [...]*

*R: Who decides where it is in the store?*

*P: The store team. So we give the stores a set of guidelines around what products should go where. So we layout our stockrooms based on frequency of pick. So our fastest selling items are [...] in the most efficient place to pick for the customer. And as you move further away or less efficient from the customer, you pick your slower items. [...]. So we give the stores*



*those guidelines; where those areas are in those stores is up to the stockroom manager.” (6-0-1, l. 235-247)*

Although the central function can see where the products are in store, and conducts the categorisation of products based on sales data, the decision making where products are eventually stored is located at store level. As the categorisation is made for the entire company, this decision making power allows the store to adjust certain products to its individual sales profile.

Also in the area of displaying products in the store, the company gives stores flexibility to shift away from centrally given planogrammes for displayed promotions.

*“But once we get hit, we probably lose one or two, we’ll take them off. Or we move them to a location behind the counter, so they can see the offer, but they can’t touch it. Most stores now manage it individually. You know what’s gonna go. [...] And you manage shrinkage to the needs of your area, wherever you’re based.” (6-1-2, l. 289-295)*

In this piece the store manager explained how the stores individually manage the display of products at the sales floor. The store uses central guidelines, but if shrinkage becomes a problem, the store finds a solution within its own available alternatives.

The retailer has a wide assortment of which many products sell less often than once per week. In accordance with the principle of not holding unnecessary inventory at a store level, not all SKUs are stocked at the stores. The retailer accepts that *“we are constantly out-of-stock of something”* (6-1-2, l. 218). It measures its performance in terms of serviceability, which accepts that availability is not one hundred percent. However, the retailer offers its customers opportunities to ensure that their requested product is in stock through ordering it into the store in advance or getting it delivered to their homes.

It may also be assumed that consumers are more willing to wait for a product than at retailers who operate in fast moving or more hedonic categories. As a high proportion of products are ordered in advance, one can assume that many customers consult one of the distance retail tools such as the catalogue or the retailer's website before they go to the store.

Also in terms of OOS response the store has some room for decision making. Whilst the product allocation and stock check processes are all centrally determined, the store management can respond independently, when a product that is already paid for, is discovered to be OOS. A store manager explains the potential responses to such an OOS:

*“Participant: [...] Once we’ve decided it’s definitely not there, then we have to tell the customer and refund that product. That means we’re disappointing the customer, we’re also losing sales. We will try to recover that by looking for a similar product and potentially discounting it, which is a cost, or sourcing it from another store. [...]*

*Researcher: So the usual response would be to offer a substitute product for it?*

*P: Potentially. Again, it is dependent on store management and how they want to resolve the issue. Me personally in this store, if that happens to a customer, I would do my level best to actually retain that sale, retain that customer. So I would try and do with a free home delivery, locate a product similar specification. [...] Or try and source them another one at local store.”*

*(6-2-2, l. 193-204)*

The area of OOS response decisions is left to the store management. The store manager in this interview points a great emphasis on retaining the customer and reducing the shopper's disappointment. Hence, in such a rarely occurring situation the retailer allows individual responses to the store management, who are in the situation. Leaving this room for decision making to the store also

prevents that store employees would see a need to work around the system in order to satisfy customers.

The way operations are designed at store level also impacts the requirements on human resources. All interviewees mention the need for flexibility on workers. This does include the flexibility in terms of work schedule, hours and positions. The flexibility is needed to respond to demand fluctuations and to keep the costs for human resources low. The flexibility in positions enables the stores to use its workforce flexibly, but also to shift workers with the flow of customers along their steps through the shopping process.

The system of flexibly allocating employees at different positions requires the retailer to skill its employees for these positions, and at the same time leads to the necessity of designing these positions simply enough so that workers can easily be trained up to take them up.

The shop floor workforce only has fifteen hours contracts, and the full-time working supervisors and managers therefore represent a more constant factor in the operations, which are needed to shift around workers and allow them to interact with the systems. As their limited working hours often might not allow them to become fully competent with all aspects of the system, the backup from full-time staff is needed to enable them to interact fully with the system.

At the same time the fact that the retailer only offers fifteen hours contracts to its non managerial workforce, leads to a relatively high labour turnover of about thirty percent. Easily usable systems might therefore also be necessary for the retailer to deal with a constantly changing workforce and to make them fully operational on the systems quickly. As an example the Christmas temporary workers are only employed for a couple of weeks and they are usually new to the business. Consequently, they would usually not face the customers, but rather focus on the backstore operations, which as a result need to be learnable quickly and supported by easily usable systems.

## **6.2 Cross-Case Analysis**

Using the Creswell (2007) framework for multiple case study analysis, the individual within-case analysis is followed by the cross-case analysis to extract similarities and differences between the cases. As the study's research method required the selection of heterogeneous cases, this chapter will firstly present the different settings and company backgrounds of the retailers, and then compare the themes that were arising and discussed within the cases.

As outlined in chapter 5, the cases were selected across different European countries. Consequently, the retailers face different settings in terms of market and competition. But also the legislative situation differs, which will become more apparent in the comparison of the workforce management. Austria has a comparably strict legislation on opening times, which can be seen as having an impact on the workforce management. Nevertheless, it must be pointed out that none of the investigated stores was opening around the clock. Although the German and the British stores had generally longer opening hours than the Austrians, they were all closing over night. Only the UK stores in the study opened also on Sundays, even though the opening hours on Sundays were shorter than at other days. The issue of opening hours arose in many interviews and its impact will be deeper portrayed within the topic areas that were affected. A discussion about the general different shopping and retail environments in the involved countries of the study is provided in chapter 5.

Another distinct difference of the case settings are the different retail sectors in which the participating retailers operate. Heterogeneity of cases was a requirement of the research method; furthermore, most research in the area of in-store logistics processes was so far conducted in the grocery sector. This project therefore consciously selected grocery and non-grocery retailers to contribute to an expansion of the knowledge base in this field. The different sectors show different shopping behaviours and expectations on the demand side; and the different product characteristics also result in different ways of managing the supply side. Within the individual case analyses, it could be seen

how these demand and supply patterns shape the companies' individual supply chains and replenishment operations. This chapter will focus on the differences in replenishment between these retailers and how these differences were caused.

The participating retailers also differ in the size of the companies and the individual stores. Case 3 for example runs hundreds of large hypermarkets and belongs to a larger retail corporation; case 4 however is an independent retail chain with less than one hundred stores all of which are small in size compared to the hypermarkets. And case 5 on another extreme is a large retail firm that operates in the convenience sector and therefore runs a rather small shop format. According to the space requirements and the previously mentioned demand and supply characteristics, the locations of the investigated retail stores vary significantly, too. The stores of fashion retailer 4 can be found in high street environments; whilst DIY retailer 2 can usually not be found in inner city areas.

As another consequence the store buildings varied between retailers, but also within the individual companies. All retailers in the study fitted their stores into either existing buildings or new retail developments where planning regulations would lead to individual solutions too. It was only the hypermarket retailer 3 that aimed for large purpose-built greenfield sites. However, due to a history of takeovers, the two stores investigated at retailer 3 were different in their dimensions, structure and appearance. Particularly the three British retailers' stores differed from each other. The reason for this was that their branches were mostly located on high streets, which left them with little choice than adjusting their stores to existing available retail buildings. Despite their different locations and supply patterns, all retailers in the study have backstore storage at their sites. However, the size of the backstores and the way they are operated differs significantly.

Whilst the actual operation of the backstores will be explained in more detail later on, in terms of comparing the settings it is worth noting that retailer 4 and 6 keep all stock in their backstores away from direct customer access. Store 2 at the Austrian grocery retailer in case 1 had its backstore majorly on a different

floor than the sales floor, and so did retailer 4 and 6 too. Although the extra time required to get access to goods was mentioned, no interviewee noted that the spreading of store space over several floors caused any highly complex or large effort adjustments to the management system.

Despite the variety in buildings, all retailers run their standardised store layouts. The level of standardisation regarding centrally given layouts differed strongly. Whilst at the fashion retailer 4, the store arranged the display of the store individual assortment; DIY retailer 2 had fixed shelf modules that were selected depending on the available sales floor space. The standardisation of these layouts is deeper discussed in terms of central control and store decision making. However, it is worthwhile pointing out that the level of standardisation varied strongly, and did even vary between different departments at grocery retailer 3. An overview of the different physical settings and the organisation sizes is provided in Table 7.

**Table 7 Cases Settings**

	<b>Case 1</b>	<b>Case 2</b>	<b>Case 3</b>	<b>Case 4</b>	<b>Case 5</b>	<b>Case 6</b>
<b>Country</b>	Austria	Austria	Germany	UK	UK	UK
<b>Sector</b>	Grocery/Hypermarket	DIY	Grocery/Hypermarket	Fashion	Grocery/Convenience	Department Store
<b>Number of Stores</b>	~100	~65	~300	~60	~3000	~650
<b>sales/store space in m<sup>2</sup></b>	4,000/400 5,600/1,800	3,200/500 5,000/2,000	8,600/720 8,650/850	150/180 255/370	158/10 1,400/280	290/1,300 340/1220
<b>SKUs</b>	60,000	45,000	80,000	up to 2,000 styles	1,900 17,000	17,000 15,000
<b>Internal Store Workforce</b>	85FT/35PT 55FT/56PT	40 FTE 53 FTE	133 FTE 140FT+PT	5FT/25PT 11FT/44PT	7FT/10PT 10FT/50PT	9FT/35PT 9FT/27PT

According to their variation in store size, also the number of SKUs stocked at the individual stores differed. Only the two hypermarket retailers show relatively homogenous numbers of SKUs at their stores. The DIY retailer runs large stores too, but for the study the company selected one of their smallest and their largest store to provide a wide coverage of its processes. Also in the case of the convenience retailer 5 the store sizes presented in the study represent two extremes within the organisation. The supermarket format of store 2 in case 5 is one of the largest sites that the company runs and has more backstore space than an average store. In the case of department store retailer 6, the two selected stores are both of the largest store format that the company operates. In this case the selection was made to show two different location categories, namely high street and retail park. They were also selected because both the stores were using a voice system for parts of the replenishment, which was not fully rolled out across the entire company yet.

With the store size also the assortment width differed. The number of SKUs depended strongly on the product range that the retailers were offering. Department store products and shoe cartons can be assumed to take up more space than a common grocery item. Nevertheless, keeping the stock separated from the customers allows department store retailer 6 to have products stocked efficiently in terms of space. At fashion retailer 4 however, much of the store space was allocated for the customers to shop around and look at the products that are on display. Although retailer 4 and 6 shared the idea of separating customers and stock, their different strategies towards customer shopping experience, resulted in very different processes between their stores.

Related to the store size, also the size of the workforce differs between the stores. But also the product categories and strategic positioning of the company in the market influenced the number of employees at the store. The customer service idea at fashion retailer 4 included that the sales employee brings the shoes from the backstore to the customer and in case of a negative purchase decision returns them. This would tie up more personnel than the replenishment processes at the department store retailer, which considered it as serving the lower half of the market and hence focussed on efficiency in its customer service.

Also the differences in labour legislation and trade union power between the countries can be assumed to be having an effect on the employment policies at the retailers. At the German grocery retailer 3, even the conduction of the research interviews with employees was subject to the labour council's permission and management was very aware of not getting into trouble with it. As it would be quite difficult to lay off a regularly employed internal worker, this company used external agency workers to cover peak demand times and some regular replenishment activities. It was also cheaper to employ these external replenishers than hiring new company staff. Also the Austrian retailer 1 used external agency workers for distributing shopping trolleys around the shopping mall. At the British retailers in the study, none used external labour for its operations. Also peak demand workers, for example the Christmas temporary



workers at retailer 6, were all employed by the retail companies themselves. As restrictions to lay off people appeared to be less harsh than in the German-speaking countries of the study, the British retailers of the study also had less formal recruitment processes and criteria. These different levels of flexibility in hiring new workers may cause individual employment and recruitment policies at the retailers. All the German and Austrian participants run apprenticeship schemes for new young employees; whilst all British retailers pay less attention on formal qualifications and train up their store personnel internally. Particularly in the case of DIY retailer 2, formal qualifications play an important part in the delivery of customer service and lead to a specialisation within the workforce. The point of specialisation in the workforce will be outlined further in the paragraph about human resources.

As briefly mentioned before, the different product and demand characteristics that are offered by the participating retailers have an impact on the eventual operations in store. On the demand side, there was more or less need to explain products during the sales process. Whilst the DIY retailer 2 and the shoe retailer 4 put a focus on advising the customer during the sales process; the grocery retailers and the department store retailer had less need for this, as their products were mainly everyday items. The products also differed in their dimensions and consequently frequency, size and type of delivery processes varied. A main point is also the issue of perishability, which had a large impact on the organisation of delivery processes.

Another point about the different settings of the retailers is the maturity of the companies. The way companies were created and evolved over the years impacts the organisational structure and therefore also the management of processes and stores. The three grocery cases, 1, 3 and 5 are the longest existing companies in the study. Whilst cases 1 and 5 were created as cooperation between independent retail stores and have a history of more than fifty years, case 3 was created as an amalgamation of several midsize retail chain acquisitions. However, the amalgamated companies and also the parent company have a longer history.

At the same time the three grocery participants also belong to umbrella companies with a large network of stores and who they arrange their distribution operations with. The other three cases, 2, 4 and 6 are significantly younger than the grocery retailers. Also cases 2 and 4 have a rather small number of stores. At case 2 this may be caused by the small home market, with expansion starting after the end of the cold war era. Case 4 is the youngest participating retailer and is expanding its store network rapidly. Case 6 is the oldest of the non-grocery retailers and its network is coming to a point of saturation within its domestic market. Its early start of a distance retail business might have also lead to a unique mindset of looking at logistics processes of the brick and mortar side of the business.

These different settings between the study's participating retailers are coming up again and again throughout the analysis. How these variations influenced the in-store processes at the stores will be explained in more detail in the following paragraphs. The structure and headings for the following paragraphs were chosen according to their appearance in the interviewees' responses.

### **6.2.1 Delivery**

Although the study itself focuses on the last 50 metres of the supply chain and henceforth on the replenishment operations within the store itself, the delivery operations directly affect these replenishment operations and are therefore portrayed here too.

The delivery operations at the stores were organised in different ways, and can mainly be explained by product and demand characteristics, and the organisational structure. In those cases where the investigated stores showed significant differences in terms of size, turnover or location; even the delivery operations within the same retail company varied.

In the first instance one can separate between stores that have a need for direct deliveries from their suppliers and those that only receive goods from their own DCs. The latter one is the case for the fashion shoe retailer 4 and the general

goods retailer 6. All grocery retailers and the DIY retailer 2 receive direct deliveries. However, they do so for a different reason.

The suppliers' deliveries at the grocers are mainly for perishable goods with a short shelf life such as bread, or for non-core product categories, e.g. cards and cosmetics. The DIY retailer in general does not face perishability as an issue; the reason for direct deliveries there are the weight and dimension of products. For construction products, e.g. cement and bricks, or heavy ovens, a cross-docking could be assumed to require significant resources. Also, these products are usually sold seasonally, which strengthens the point for a direct supply.

As retailer 4 and 6 only receive deliveries from their own organisation, they do not require quality checks at the store level. The DIY retailer 2 has a mixed approach to quality controls, where the backstore employees can identify whether a product needs to be checked in detail or not. The company ensures that it needs only a single quality check when a product enters the organisation.

Although the three grocery retailers have a large proportion of direct deliveries, they do not have a standard procedure for quality checks. However, one may assume that the manual handling in the replenishment process represents a sort of quality check; but this would strongly depend on the work quality of the person who does the replenishment.

Due to the high turnover of items, even the numbers are generally not double checked. An exception is the small store 1 at convenience retailer 5, where the location demands a manual handling of boxes instead of rolling in cages. Here, a number check happens almost automatically. Also the very limited storage space would lead to an easy identification of surplus deliveries. At the larger stores only a huge mispicks delivery would automatically cause the attention of an employee. At grocery retailer 3 a fixed mistake rate is agreed between store and the internal delivery services to compensate for mispicks, rather than having to deal with every mistake individually.

An exception from the usual number checks routines are high value items. At the grocery retailers 3 and 5, and at the general goods retailer 6, high value lines are treated in separated cages and are processed with extra measures to reduce theft. The Austrian grocery hypermarket retailer does not have such procedures, as tobacco products are only allowed to be sold in dedicated tobacco stores. At the other grocery retailers they enjoy particular attention in terms of number checks due to a high theft risk. Table 8 only recognises the general procedures for number checks and does not consider the special treatment of these high value lines.

**Table 8 Incoming Deliveries and Checks**

	<b>Case 1</b>	<b>Case 2</b>	<b>Case 3</b>	<b>Case 4</b>	<b>Case 5</b>	<b>Case 6</b>
<b>Sector</b>	Grocery/Hypermarket	DIY	Grocery/Hypermarket	Fashion	Grocery/Convenience	Department Store
<b>Direct Deliveries</b>	Yes	Yes	Yes	No	Yes	No
<b>Quality Check</b>	No	Yes	No	No	No	No
<b>Number Check</b>	No	Yes	No	Yes	No	Yes

With the turnover and size of products, the frequency of deliveries consequently varies. Every retailer runs its own policies towards delivery operations and one can see habits of more or less overall operations optimisation.

Deliveries at the DIY retailer 2 can arrive at any time during the day. However, one must not forget that this retailer has a dedicated backstore logistics team. As all backstore procedures are well defined, the unloaded goods can be processed at a later time if the backstore is busy. The general goods retailer 6 tells the stores one day in advance about the predicted delivery window, which covers a two hours period. This way the store can schedule its workforce

according to the delivery time. Grocery hypermarket retailer 3 gives the stores two options for the delivery operations. The store can choose between a predictable delivery window at an order lead time of two days, and a less predictable delivery window at an order lead time of only one day.

The time of arrival has a large impact on the grocery retailers. The products are perishable and time in transit means the store is losing out on shelf life. This is a particular problem for Saturday deliveries at the grocery retailers in the German speaking nations, as the stores close on Sundays and products lose another day of shelf life. Furthermore, the turnover is quite high and for many products it is unlikely that the consumer will postpone the shop; hence it makes a difference to the replenishment operations if a product is delivered on a Saturday morning or in the late afternoon.

Depending on the product characteristics, the delivery frequency varies. The DIY retailer receives several deliveries per day and internal deliveries are usually full truck loads. Also the grocery retailers receive several deliveries per day, separated between temperature controlled and ambient and in case of retailer 1 and 3 also separated between fast moving and slow moving products. Grocery retailer 5 however, consolidates these two streams at the local DC before they are transported to the store; the same does general goods retailer 6. The fashion retailer 4 is the only store that only receives one delivery per day from one source.

### **6.2.2 Backstore Operations**

The store processes regarding an incoming delivery depend on the available space at the retail store and also on the retail concept. As outlined before, the incoming products go through the stage of being received and potentially checked. Usually, the products will then be placed in the backstore area. Only one store in the entire study, store 1 at the convenience retailer 5, brought products straight to the shop floor. This store was by far the smallest store in the research project and did not have the backstore space for much buffer stock. At this store deliveries had to be carried into the building manually case

by case, as the backstore did not allow space for roll cages. The employees who were receiving the delivery made a list prior to the arrival of products that needed to be replenished urgently on the shelf. These products were then separated during the delivery reception to be replenished straightaway.

The replenishment processes of the remaining stores can be generally categorised in terms of customer access to goods and whether there was dedicated logistics personnel.

At the fashion retailer 4 and general goods retailer 6, the customer did not have access to the products, but they were brought to the customer by a store employee. Whilst retailer 6 did this mainly for efficiency reasons, retailer 4 appreciated the additional customer contact and personal treatment of customers by the sales advisor. At both retailers dedicated logistics personnel managed the backstore and replenished the shelves.

The fashion retailer had a stockroom manager, who –together with part-time stockroom employees– took care of delivery put-away and all backstore issues. The stockroom manager was also responsible for replenishment throughout the day. When customers decided not to purchase a pair of shoes that was presented to them by the sales advisor, these shoes were brought back to the backroom and dropped at an area for ‘dead stock’. The stockroom employees therefore constantly put this dead stock back to its shelf location. The general system how products were stored in the backstore was given by the company. Every shoe box had a product code from which employees could read what type of shoe it is. The products were stocked in line with this code. The stockroom manager was responsible for applying this system to the backstore and arranging the space accordingly.

At the general goods retailer a team of workers was employed solely for putting deliveries away. The backstore space was arranged according to the sales frequency and product characteristics, so that the overall picking time would be optimised. As the store sizes were generally larger and numbers of products, staff and turnover higher, the stockroom manager himself would rarely handle

products, but has much more of a managerial role. Similarly to retailer 4, the stockroom manager applied company guidelines to the store and arranged shelf space accordingly. The central company also decided whether a product needed to be considered a fast mover and being placed in the area where order picking was quickest. In contrast to the shoe fashion retailer, the company used warehouse technology at the store level. As a consequence, products were stored randomly in their according sector, whilst the shoe retailer stored its products related to categories.

Although customers had generally access to the goods on shelf, the DIY retailer 2 also operated a backstore system with dedicated backstore logistics staff. Similarly to the other two non-grocery retailers of the study, the DIY retailer had central guidelines about the management of the stockroom and the logistics processes at the backstore. The backstore logisticians worked independently within these guidelines. Only when the backstore logisticians had approved an incoming item, the employees were permitted to take it from the backstore.

In contrast to the non-grocery retailers of the study, the store departments are responsible for the backstore processes at the grocery participants. Like the DIY retailer, the grocery retailers allow their customers direct access to the products on the shelf and the backstore is only used as a buffer space for products.

The two hypermarket retailers in the study employ backstore logisticians. However, these are in charge of receiving the deliveries and checking them against delivery notes. The management of the storage area is down to the departments, of which everyone got a certain space allocated to stock its products. The managerial process here is in control of the department leaders, who organise the storage of their products in their backstore area independently.

**Table 9 Backstore Operations Comparison**

	<b>Case 1</b>	<b>Case 2</b>	<b>Case 3</b>	<b>Case 4</b>	<b>Case 5</b>	<b>Case 6</b>
<b>Sector</b>	Grocery/Hypermarket	DIY	Grocery/Hypermarket	Fashion	Grocery/Convenience	Department Store
<b>Backstore</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>Backstore Process</b>	Department	Backstore Logisticians	Department	Backstore Logisticians	Department	Backstore Logisticians

With the non-grocery stores running central guidelines for logistics processes, it is probably less of a surprise that they have logistics employees for the backstore operations. Their products are also generally higher in value and have a lower sales frequency. Therefore it is more important to check the correct numbers and quality at the point of arrival within the business and to monitor products more closely. With the application of more sophisticated systems, the successful operation of backstore operations requires specialised logistics employees.

### **6.2.3 Store Ordering**

During the interviews with store employees about replenishment activities within the store, most commonly the issue of the ordering system was raised by the participants at an early point.

All the retailers in the study had a technological system that supported the ordering process. However, between the retailers these systems varied strongly in terms of where the ordering decision is actually made. The point of decision making could be at the store or even department level, or be an entirely central decision about stock allocation.



Whilst the grocery retailers had generally a system that supports the store in its ordering, the non-grocery participants had an approach of more centrally controlled allocation of the products to the stores with less opportunity to interfere for the store employees.

The grocery retailers all rely strongly on the decisions made by the store employees, who do the ordering. Within the store hierarchy the ordering can be done at different levels. At the hypermarket retailer 3, department leaders and full-time employees would be in charge; at hypermarket 1 the store manager would look through their ordering before releasing them and at the convenience retailer 5, the store manager does the ordering.

All grocery retailers use systems that suggest the ordering amount, based on products in stock, average demand and maximum stock levels. However, the store employees could decide to change these suggestions and –even within the same retail company– the store employees had very different approaches of how much changing these suggestions needed. Retailer 3 also issued an alert if an order was far beyond the usual amount. At retailer 5 the DC would deliver any order size if the product was available within the network. The overstock would then be the store's problem that ordered it. Even if a product was not listed at the store itself, the store could order it if it was available somewhere in the business.

For fruits and vegetables the companies usually relied entirely on the department personnel, as the ordering needed human judgement about the freshness of the present stock. Although the stores' influence on the ordering of promotions was more limited than for regular reordering, they could usually increase promotion orders or reduce them in coordination with the central buying function. The change of a promotional amount was easier for usually listed products and almost impossible for specially ordered promotions. Despite all the opportunities to interfere with the ordering process, the final decision was always with the central function and required the availability of the products at the DC.

A mixed approach was taken by DIY retailer 2. The inventory levels and redelivery cycles were set centrally. Nevertheless, the store employees had access to a computer system that allowed them to communicate with central distribution easily. This way they could ask to have orders changed or get product levels increased. Through the communication they could provide a reason for their request, which made decision making at the central function easier. The sales employees could also always place a special order for a customer, even if a product was not even listed at the store or had to be ordered in from a supplier's catalogue. However, inventory levels were centrally decided and therefore influenced by headquarter considerations towards which the store had no influence.

On the centralised extreme of ordering were retailers 4 and 6, where the decision about stock allocation was made at head office. Particularly at retailer 6 the system excluded store interference or changes of the stock allocation. The deliveries were centrally calculated based on the forecasted demand at the store and on customer orders. In case the central had to make a decision between stores, an item would always go to the store where it was more likely to be sold. In opposite to the grocery retailers where a customer could place a larger order with the store employees, who would then feed it into the system; the general goods retailer's system allowed customers to interact directly with the automated ordering system either through the distance channels or via placing an order at the till in store.

In a similar pattern works fashion retailer 4's ordering system for the customers. They could order either through the online business or could place an order at the store for any type that was available anywhere within the business. The stock was allocated to stores according to where they sell best. The aim of the stock allocation was to sell a product as fast as possible, as trends and consequently demand for a certain product or style could change rapidly in the fashion business.

**Table 10 Ordering Systems Comparison**

	<b>Case 1</b>	<b>Case 2</b>	<b>Case 3</b>	<b>Case 4</b>	<b>Case 5</b>	<b>Case 6</b>
<b>Sector</b>	Grocery/Hypermarket	DIY	Grocery/Hypermarket	Fashion	Grocery/Convenience	Department Store
<b>Ordering</b>	Department /System Suggestion	Automated	Department /System Suggestion	Automated	Department /System Suggestion	Automated
<b>Order Changes</b>	Yes	For special orders	Yes	Little	Yes	No

With the shift of ordering to the central function, retailer 4 and 6 also needed more visibility of what was happening in the store. These two companies therefore had an overview what was stocked at the stores and what their backstore capacity could take. At retailer 4 the different types of shoes would also need more or less space, so that the number of products that could be stocked varied. In case a stockroom became too congested, the stockroom manager could contact central distribution to reduce the level of inventory. Also at retailer 6 the central stock allocation knew about the backstore space at the stores. Nevertheless, if a store was expected to be selling a promotional product, the company would push the inventory into the store.

Retailer 4 and 6's operations also differ from the other retailers, as they have regular reverse flow logistics operations. Both send their stores a weekly list of products that are to be sent back to the DC. In the case of retailer 4, the company changes this procedure to three times a week to support the aim of selling stock as fast as possible. Retailer 6 aims for lean operations and therefore calls back excess stock and products that are needed at other stores. There are also call backs for the regular assortment change, which will be explained later on.

These reverse operations do not exist at all at the grocery retailers, where products are perishable and of lower value. The perishability of products may

also be a factor why the store ordering is done at the store level. The ordering needs to consider the appeal of the product and the current demand at that time, as for many products it is not the case that just the next delivery can be a bit reduced if stocks at the store are a bit too high. Products that run out of shelf life either have to be sold at a reduced price beforehand or being disposed, which results in a financial loss to the store. Also is the frequency of sales much higher and the data accuracy lower at the grocery companies, which requires a more flexible response on the shop floor. It must also be noted that many grocery retailers come from a tradition of a network of independent retail stores and might therefore be embedded in a culture that values the independence of each store.

#### **6.2.4 Fulfilment**

Looking at the actual physical replenishment activity within the store, the two stores that separate the customers run their operations differently from the ones with a shelf access approach. At retailer 6 the put-away of the delivery is the replenishment process. The stores have a team of staff that use a voice system to put away the delivery when it arrives. The few items that go to the customer counter for inspection only are put back by the order picking employees.

Retailer 4 does not have a team to put the deliveries away. This is the task of the regular stockroom employees. Sales floor employees are generally not participating in any put-away operations in the back, although they might be helping out from time to time. The main replenishment push happens when the delivery arrives and stock needs to be put away. But also throughout the day, the dead stock needs to be put back on the backstore shelves to keep it available for the sales staff. One could potentially argue that bringing the selected shoe to the customer and hence making it available for the customer is a sort of replenishment process in an extremely personalised way. However, this study will take the point that this activity is more sales dominated and will therefore consider it as a part of the sales activity and not replenishment. Nevertheless, it is overall a logistical process within the store.

The sales employees are also responsible for the presentation of the products that are on display at the sales room. Within this task they are in charge to check that all products are displayed that are supposed to be there. Again, this is considered more of a marketing process, although it is very closely interlinked with replenishment in the sense of making sure that products are available to the customers. For this reason the replenishment operations at retailer 4 are summarised in the table below as being conducted by the backstore employees.

**Table 11 Replenishment Responsibility Comparison**

	<b>Case 1</b>	<b>Case 2</b>	<b>Case 3</b>	<b>Case 4</b>	<b>Case 5</b>	<b>Case 6</b>
<b>Sector</b>	Grocery/Hypermarket	DIY	Grocery/Hypermarket	Fashion	Grocery/Convenience	Department Store
<b>Replenishment</b>	Department	Department/External	Department/External	Backstore	Department	Backstore

The remaining four cases have a more common approach in terms of their shelf operations. Store employees replenish the shelves from the backstore or from incoming deliveries, and the customers pick their desired shopping from these shelves.

In contrast to case 4 and 6, the way these operations are structured differs not only between the retailers, but also between the stores themselves; which leads to the conclusion that store fulfilment operations at these four companies are entirely within the organisational control of the store.

At all cases where the customers access the shelf stock, the shelf plans are mainly given by the central organisation. The decision where and how many products are displayed can more or less be influenced by the department leader. For example can the wine department interviewee at retailer 3 decide on the shelf allocation and only has to adhere to a general space allocation for

certain wine regions, whilst the health and beauty department receives a detailed shelf plan. All the four stock exposing retailers have in common that the presentation of promotions is decided on department/store level, although the products and stock for promotions is centrally given. The two retailers that separate stock and customers do not have to be concerned about consumer perceptions of their backstore shelves and the backstore shelf allocation is based on designing a functional system to support store operations.

There are several factors that trigger replenishment activities at the four stock exposing retailers. Similarly to the other two retailers, an incoming delivery can cause a replenishment push. This is particularly the case at store 1 of retailer 5, but also the stores at retailer 1 express the aim to bring goods onto the shelf as soon as possible after the delivery arrived. A main issue hereby is the availability of human resources at the time when the delivery arrives. Reliability of precise delivery windows is not necessarily given, which results either in inefficient utilisation of human resources or a delay in the replenishment activities.

Store 1 at retailer 3 schedules its main replenishment push in the early morning before the store is open to customers. Also store 2 at retailer 3 leaves the delivery sitting in the backstore until human resources are scheduled for the replenishment. At these stores the replenishment is triggered by the availability of human resources. The extra workers for the replenishment at retailer 2 and 3 were often external agency workers; the reasons for this and the impact on replenishment will be shown later on.

The scheduling of the replenishment resources is influenced by the reliability of deliveries, the local employment market and customer flows. From a central system's point of view the product is already at the store and the distribution network has therefore finished its piece of the supply chain. Nevertheless, the insufficient synchronisation between store and distribution operation causes a delay in making products available on the shelf.

Another trigger for replenishment activities is a customer request for a certain product that is OOS. All shop floor employees in the interviews understood their role as serving the customer. If a customer enquired about a product, the employees would check whether there is more stock at the store and make the product available to the customer. In case more stock of the product was available at the backstore, this action usually resulted in replenishing the product on the shelf.

At the larger grocery stores the constant replenishment would be triggered by a 'which area looks worst' approach. At the beginning of their shift, the department leader or the person in charge has a look at the area of responsibility and then decides which aisle needs replenishment first. They did focus on promotions first, as these tended to be OOS more frequently and the higher sales frequency meant that an OOS there has a higher impact. The ongoing replenishment would then continuously use the optical judgement of the replenishment personnel, with a department or team leader setting the priorities which area needed replenishment next. At most participants the permanent shop floor employees were allocated to a certain product category or department. Therefore they knew which products were selling rapidly or needed more attention. Much of their replenishment knowledge came from experience and training in the product category they were working at. At hypermarket retailer 3 for example, the dairy department leader filled up milk and eggs as early in the morning as possible, because they were delivered on pallets and it would be cumbersome to drag an entire pallet into the store when it becomes busy.

In general, two ways of how products were prepared for continuous replenishment were observed. Employees could either drag a cart of products for a certain department to the shop floor and started replenishing that aisle, or they looked for products that were running OOS or low first and then get the products and fill up the shelf.

Bringing the entire cart or pallet to the shop floor was used for the replenishment pushes at the larger sites of retailer 1, 2, 3 and 5. During these

replenishment pushes there was usually low or no customer traffic and the employees could focus on filling the shelves. The approach was also standard at retailer 1 and 2, where almost all products from the incoming delivery were supposed to be fitting on the shelf. Hereby the sales frequency occurs to be crucial, as it determines the extent of further continuous replenishment operations throughout the day. Also temperature control was an issue. A delivery of chilled goods could not be left at the aisle for a longer time, due to food safety regulations.

The latter alternative of filling up individual products on the shelf was more prominent throughout the day, when stores were busier. It was also the standard approach at the smaller store of retailer 5, where it was physically impossible to get full roll cages inside the store. The approach was also used at the DIY retailer and hypermarket retailer 1, where the store shelf system had a so called 'Überlager'. Extra stock was stored on top of the sales shelf and the employees could move it from the top of the shelf to its place on the shelf when it was needed. At the DIY retailer, store staff needed a ladder or other technical devices to access the Überlager, which forced the activity to be focussed on the replenishment of individual products. Also at the dairy department of hypermarket retailer 3, the department employees were packing a trolley with the products that needed replenishment, and brought these to the sales area. As mentioned earlier, this was necessary to ensure that products did not remain outside a temperature controlled area for too long.

The two ways in which humans and systems interacted at store level differed from each other mainly in the point where the decision was made. The grocery retailers in the study showed much freedom in decision making for the shop floor personnel within their own part of the supply chain. At the non-grocery retailers the initial stock allocation decision came from the system and was in a sense forced onto the store. Nevertheless, as the stores had less opportunity to interfere with the system, the product flow processes were designed closer to the needs of the store processes. Due to the product and shopping characteristics, there was also less need to interfere with the system than at the



grocery retailers. Also much interaction was cut out and the customers could sometimes interact with the system directly. All systems –regardless where decisions were made– relied on humans on the shop floor to communicate corrections into the system. Although the retail store employees and the system interact mutually to run the replenishment operations, one can differentiate between situations where the system fulfils the orders that come from the shop floor and those where the employees are mainly maintaining a highly automated system.

### **6.2.5 Human Resources**

The different approaches towards shelf replenishment and store operations in general lead to various requirements towards the store workforce. Carrying on from the previous chapter, employees interact to a different extent with systems that differ in their complexity. Furthermore, the required interaction with customers and other factors such as labour regulations impact the management of the store workforce.

Particularly DIY retailer 2 and shoe fashion retailer 4 have a strong focus on customer service within their store operations. Both of them therefore keep sales advisors free from logistics activities, so that they can concentrate on their customers. DIY retailer 2 considers its products to need explanation. It assumes that most customers want advice during their shopping and sees this as a main differentiation in its market. The sales employees are highly skilled; most sales advisors have an apprenticeship in a trade, and shall approach customers to consult them. One exemplary artefact is the existence of a bonus scheme, which rewards the individual employees for their sales achievements.

As a consequence the tasks within the store are clearly divided between logistics and sales activities. The main fill up of shelves is left to replenishment employees. The required skills for the replenishment are rather basic compared to the sales employees. At store 2 of the retailer, these replenishment workers are hired from an external agency and work in the early morning when there are

no customers in the store. The replenishment throughout the day when an OOS is recognised is done by the regular department employees. The much smaller store 1 at the retailer does not use the concept of having pure replenishment workers. The specialisation at this store only separates between logistics specialists at the backstore and the workers at the sales floor. Due to the smaller site, the stock from the backstore could not be left till the next morning but had to be brought on the shelves more rapidly. Hence, all sales floor employees also needed to help with the replenishment and the selling.

The store manager also experienced that sale employees would not know about product availability when they were separated from the replenishment and therefore rejected the idea of employing external replenishers. The external replenishers would hereby prevent the interaction of the sales floor employees with the system. As the external workers did not have access to the ERP system and were also separated from the managerial system due to their working hours, the use of only internal general sales floor personnel allows the continuous interaction between replenishment workers and system.

At retailer 6, the replenishment was solely conducted by the internal put away team. Since the stock was kept in the back, these employees did not have any contact with customers. The put away team interacts with the replenishment system through the voice headsets. The interaction is automated. The employees receive tasks from the system and report their accomplishment or amendments back. If any problems occurred, the shop floor employees would report to their supervisor or the stockroom management and they would take care of the more complex interaction and investigations of the problems.

At the grocery retailers the products usually require less explanation. However, as the stock is presented on the shelves, employees can be approached by customers. At all grocery retailers the interviewees understood their job to serve customers and a customer question would always be given priority to the replenishment activity. Apart from few backstore positions, logistics and sales is not divided at these retailers and the shop floor personnel is considered being generalists rather than specialised only on a certain task. Nevertheless, this

view differs between the retailers. The convenience retailer 5 needed its employees to be absolute generalists. Store employees would take care of the replenishment and also work at the till. The smaller store 1 at the convenience retailer used this approach to an extent that employees would shift constantly between replenishment and till operations depending on customer flow.

Checkout operations were thereby prioritised over replenishment. Every employee in a shift also had a certain zone that he/she was responsible for and that they would check and replenish during the times when the till was less busy. The larger store 2 of the convenience retailer had store employees replenishing any area of the store. At the beginning of their shift it was looked which area needed replenishment at the time. The store manager explained that a reduction in turnover led to the requirement of using human resources more flexibly and hence generalists were needed that could work at different areas of the store.

Due to the size and turnover of their stores, the hypermarket retailers 1 and 3 did not develop their staff to generalists as far as the convenience retailer. Employees were allocated to certain departments where they always worked and only helped out at other places in the store. However, the replenishment employees' also took care of the part of the backstore where their products were stored. They also had wider and more complex tasks such as the ordering for regular products and promotions, and in case of retailer 3, the departments also organised their own shift schedule. The interaction between system and humans at these retailers was therefore occurring all the time and almost all internal replenishment employees had access to the system. The extent of their access to make amendments on the system was related to their tasks and level in the hierarchy.

Retailer 3 also used external agency workers to support the replenishment process. These workers were not allowed any system access, but did mere shelf replenishment. It was also aimed for having them only in the store when there was no or little customer traffic. Those external workers that worked during opening hours, were wearing different clothing than regular staff and

customers learnt not to approach them for service. Usually there was at least one internal employee at the department at any time to take care of the continuous replenishment and the ordering. Therefore the use of external workers did not disrupt the interaction of internal workers with the system. One main reason for the use of external workers was the fact that they were cheaper and could be laid off more flexibly than internal employees. It remains unclear whether the same development into specialised replenishment workers who are otherwise excluded from system interaction would have occurred if labour regulations and union power were less significant.

As the systems at the grocery retailers required more decision making from the employees than at the non-grocery retailers, experience was an important point to operate these systems successfully. The amount of training that employees received at the retailers depended on the complexity of systems. The backstore logisticians at DIY retailer 2 for example received training at two different stores before they started working at their new position. External replenishers however, would not receive any training at all. The same occurred at the German and the Austrian grocery retailers, where most internal employees went through an apprenticeship scheme, whilst external workers with no system interaction were not skilled in this way.

#### **6.2.6 Data Transparency and Data Accuracy**

The access to ERP data and the quality of this data can be considered as an enabler for the successful work of the store personnel. The availability of accurate stock data supports the employees in making right judgements towards the amounts being ordered into the store, to place special orders for customers and to give customers correct information about the availability of products.

The transparency between the grocery and the non-grocery retailers in the study differed in the way that the non-grocery retailers had access to all ERP data in the entire business. They could see whether a product was still available

somewhere else in the company and could either direct the customer there or transfer the product to their store. The grocery employees however could only see the stock that was already at the store or ordered into the store. They were not informed about the unavailability of products at a DC level, but had to conclude such an event from non-accomplished orders.

The data accuracy can be assumed naturally lower at the grocery retailers due to the higher product turnover. No checks were performed at the reception of goods at the store, as turnover and product value were probably too low to justify an inspection. Also did customers have direct access to the goods, which caused data inaccuracy through theft. As a consequence the employees could correct stock data easily. This empowerment was necessary to allow employees the correction of data once they spotted an inaccuracy. As the replenishment cycles were short and the ordering system used the stock numbers to calculate the next orders, the data could be quickly corrected without formal procedures.

The non-grocery retailers with a generally higher individual product value also had more rigid checks of the incoming products. Consequently, the correction of stock data was usually conducted through another managerial stage. At the DIY retailer stock record corrections needed to be reported to office personnel who would then investigate and execute the correction. The employees at the shoe fashion retailer had to ask central distribution to change a stock record and at the general goods retailer, stock record amendments –apart from incoming deliveries through the voice system– were investigated and conducted by the stockroom management.

Data accuracy can be considered as generally more important at the non-grocery retailers, because their distribution decision making was more centralised. The stores were also less used to communicate with the central function and incorrect systems would need longer to get noticed and corrected. At the same time the central function could only base its decision making on the available data from the stores; hence data inaccuracy at store level had a

potentially higher negative impact than at the grocery retailers, where stock data needed to be corrected constantly.

Accurate data at the non-grocery retailers is also essential for the sales employees to deliver customer service. They needed to see whether they could order a product for a customer. At the grocery retailers, listed products could always be ordered in, as they were standard everyday products. The products listed at the non-grocery retailer however, could be listed only for a certain season or a fixed amount was purchased by the central function. Once the product sold out, a redelivery into the business was unlikely or at least unclear.

Ensuring data accuracy enjoyed different priority levels related to the customer experience in case of an OOS. At retailer 6 the customers paid before they received the product, such an OOS would therefore have a strong negative impact. Hence, many routines were installed to check stock accuracy. These checks however were integrated into the regular processes at the store. The put away workers talked the amount of products they put on a shelf into the system, which then automatically checked that against the delivery note.

The process of putting the items away was not accomplished if the employee did not submit the number of items. The interaction between them was embedded in the process. The number checks of products when there were less than four products left, was a managerial routine. The pickers were supposed to do the check. The backstores contained signs to remind the employees, and also the picking tickets for products of less than four had a reminding text printed onto them. In case the picker spotted an exception, the management was informed to deal with the problem. The retailer of the study where failing in-store processes would have the potentially strongest impact could therefore be characterised by incorporating interaction between store logistics personnel and systems into its routines and processes.

On the other extreme was grocery retailer 1. No set routines existed for OOS detection and it was entirely down to the department and store management whether an OOS was spotted and dealt with. The departments would usually

drag the delivery cart into their department and start replenishing, as most products would fit onto the shelf and into the Überlager. The way that employees dealt with empty shelves depended to a great extent on the job experience of the worker, because the job experience enabled the shop floor worker to understand and interact with the system. In contrast to retailer 6, the hypermarket retailer 1 did not have any measures to check stock accuracy in advance of an OOS. The event of spotting an OOS triggered the interaction of the employee with the system to investigate whether stock records were correct and if there were any ordering issues.

Also at DIY retailer 2 and at the hypermarket retailer 3 the employees would only check stock record accuracy if an empty shelf was recognised. However, at their stores a weekly shelf gap check was conducted by workers from outside the department. From this shelf gap check a list of all OOS was produced, which the according department had to investigate. Again the interaction was triggered by an OOS; nevertheless there was a routine in place that ensured the recognition of an OOS, so that the department could respond to the issue.

Shoe fashion retailer 4 had a daily routine to check empty shelves in the store. Although the task did not receive top priority, there would be regular checks if all products were on display. In case a display was empty, which occurred very rarely, the sales employee would either find the missing display or put another shoe in the place and get the stock data corrected. This routine appears very similar to retailers 2 and 3, just at a higher frequency. The reason for the higher frequency might be that fashion shopping follows different shopping patterns and customers would browse and try a product they like. If a product is not on display, it is unlikely that they enquire about it. Therefore the engagement of employees in regular checks needed to be within a routine managerial process.

### **6.2.7 Concept of Product Availability**

The retailers across the study also had different perceptions of what an OOS actually meant. The fashion retailer 4 even aimed for OOS. Fashion trends

could change rapidly and it was essential to sell the purchased stock as soon as possible. Nevertheless, regular checks were installed to avoid operational OOS, in the sense that a product was not on display whilst stock was at the store. Similarly retailer 6 had two kinds of OOS. Generally the store would always be OOS of something, because the store could not stock all SKUs that were available in the business. But again many measures were used to prevent an operational OOS, where customers would not get a product they had ordered.

The other four retailers understand OOS in a classical way. The only differentiation store employees make here, is between OOS at the DC and OOS at store. Although they were aware that the customers receive it as an OOS regardless where it was caused, it mattered to the store employees in the way how they dealt with the problem. Those store employees interviewed in the study were mainly experienced workers. Thus, they knew how to deal with an OOS. They could check on the system whether there were outstanding orders, which led to the conclusion that the product must be unavailable at the DC. At retailer 2 the shop floor employees could also find out about the availability of the product at the DC and when it was scheduled to become available again. The kind of OOS makes a difference how they interact with the system. For an undeliverable product the store employees have to wait until it becomes available again and the system automatically fulfils the outstanding orders. If the product is available at the DC, the employees have to find the cause within the store, which would usually lead to the correction of stock data on the system.

#### **6.2.8 Culture**

The interaction with the system also correlates with the organisational culture of the retailer. At the grocery retailers, the shop floor personnel's main task was to maintain the availability of products. The proportion of advising customers was much smaller than at the fashion and the DIY retailer. Thus, there was no aim to relieve the employees from logistical activities. The interaction with the system could even be seen as one of the key activities of their job. As they also interacted with shoppers throughout the day, they had to be skilled to operate



the replenishment but also to advise customers when needed. Retailer 6 had a bit of a special position in this study, as the store was much more seen as a type of warehouse and a lot of warehouse technology was actually applied to run the stores efficiently. Consequently, the interaction with the system was integrated into the replenishment process.

The companies also had a different heritage and organisational structure. The grocery retailers were the older companies in the study and originated from networks of stores, where each store was run as an individual business. Thus, the stores historically had a lot of decision making and ordering located at store level. The non-grocery retailers were much younger and did not come from such a background. Therefore the organisational structure was more of one enterprise that was ran through one supply chain. Whilst the interaction between central organisation and stores was rather transactional at the grocery retailers with each part of the supply chain being responsible for their piece; the non-grocery retailers had more of a supply chain view where the availability of products was tracked and managed through the entire chain to the shelf.

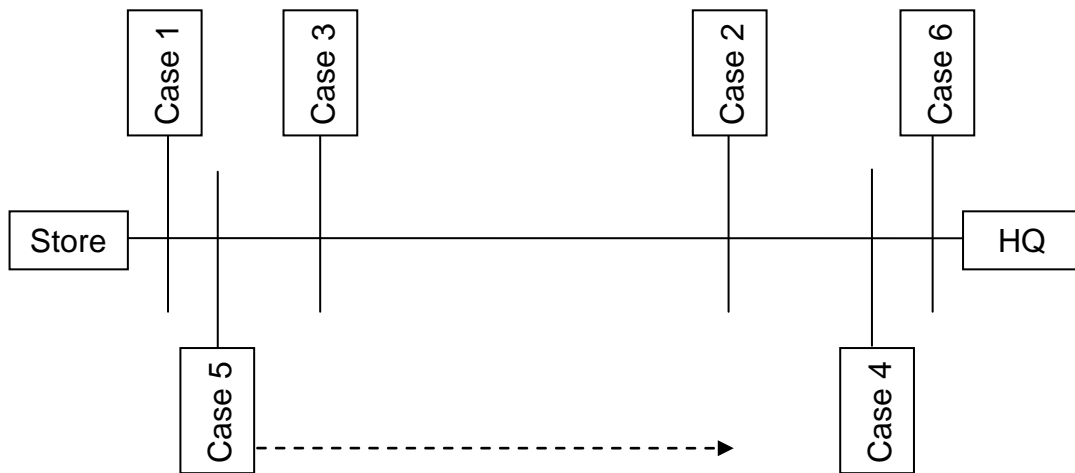
Within this chapter the main similarities and differences between the involved retail companies were outlined. As the applied research method required a heterogeneous sampling, the formal differences such as size and sector were portrayed firstly, before they were put in relation to the operations as they were described in the interviews. The areas evolving from the analysis of the individual cases and the subsequent comparison of those were the delivery, the backstore, replenishment, data management and the organisational culture. The chapter's aim was to identify the differences and similarities within these topic areas and to investigate the reasons for those. The following chapter will show how these arising differences and similarities develop into more general typologies.

### **6.3 Typologies**

Remaining in Creswell's (2007) structure that was laid out in the data analysis method chapter, the rephrasing and reflective analysis of the individual cases and the cross-case analysis of them is now followed by the step of assertions and generalisations. Accordingly, the application of the documentary method goes from individual interviews towards the extraction of general types. At the same time the development of the types concludes the data analysis of the research project.

Typologies are looking for general patterns within the externally heterogeneous sample. The similarities and differences between the sampled stores and organisations were described in the previous cross-case analysis. This chapter aims to display general types from this comparison to make the research results easier accessible. Following Kelle and Kluge (1999), typologies are not an exact copy of reality, but rather a simplification of reality to make it accessible.

The most basic point in the comparison of the interaction between humans and systems at the store level was to identify the actual extent to which employees could interact and interfere with the replenishment system. Figure 11 illustrates where decisions towards replenishment activities were made in the retail organisations. The distances between the cases do not relate to a scale. The figure is meant to give a subjective illustration of the decision making location in the management of in-store replenishment as it was perceived by the researcher.

**Figure 11 Replenishment Decision Allocation**

Although retailer 5 had plans to rearrange its replenishment to more centrally controlled operations, it can be concluded that grocery retailers put more power towards store and shop floor employees than non-grocery retailers, where most logistics replenishment decisions are centrally given. Nevertheless, case 5 was planning to shift its replenishment management to a more centralised approach and can therefore be taken as evidence for further centralisation tendencies in grocery retailing as authors such as Dawson (2000) and Burt et al. (2004) state.

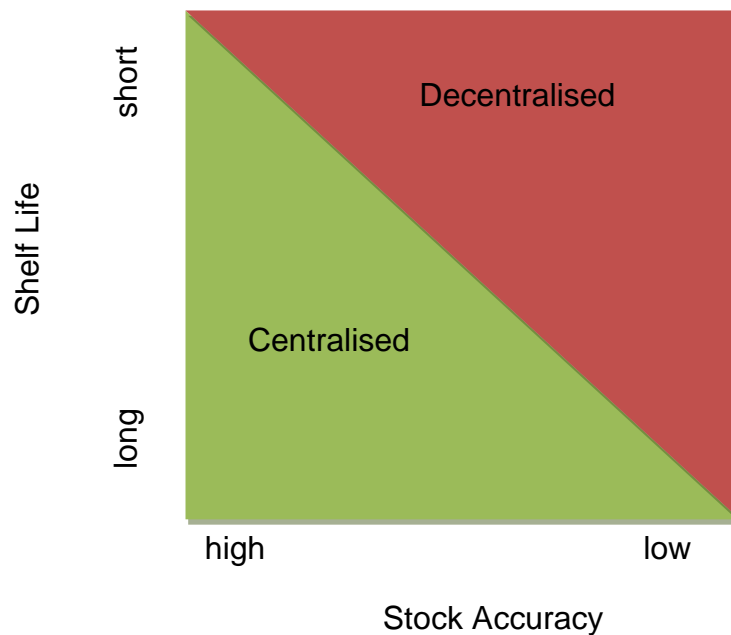
Aastrup and Kotzab (2009) relate the store management to having a large impact on OSA performance in a study with independent grocery retailers. Henceforth, research may be needed to verify whether this is also valid for retail chains and whether this impact differs between centralised and decentralised replenishment management approaches.

Regarding the need to interact with systems, store employees at grocery retailers mentioned the short life of products and that perishable products need the optical judgement about freshness. This confirms Trautrim and Grant (2007), who show the need of perishables for a replenishment management different to products with a longer shelf life. Also Kotzab and Teller (2005) looked at perishable products and their model of store replenishment in which the ordering is located within the store. At case 1, the ordering for fruit and

vegetables was done by the department leader himself. Consequently, the ordering of perishables requires that the employee has the decision making power to trigger orders on the system. It was also pointed out that there was the need to correct stock records and to place orders for customers. Correcting stock records happened much more often at the grocery retailers. One can assume that higher product throughput, lower product value, and product characteristics increased the need for these corrections.

The different replenishment needs for different categories can also be seen in McKinnon et al. (2007), who establishes vast differences in the performance of product categories, although they all go through the same supply chain. At the hypermarket retailer in case 1, several supply chains existed next to each other. Non-food products were delivered separately and perishables were delivered more frequent than other products. According to this need for several supply chains for different categories, the need for different interaction in terms of frequency and decision making power arises.

Placing orders for customers was the main reason for non-grocery employees to interact with the system. They also mentioned the need to get stock records adjusted. However, the stock record adjustment was more prominent in the DIY retailer's interviews than at the other two non-grocery retailers. Hence, one can argue that a short shelf life and a generally low stock record accuracy may require frequent interaction with the system and therefore need a decentralised management of stores, as illustrated in Figure 12 below.

**Figure 12 Centralisation of Replenishment**

Stock accuracy in Figure 12 does not mean the achieved stock accuracy in the retailer's system, but the 'natural' stock accuracy that is underlying in the retail approach a company is using. Although stock accuracy can of course be influenced through monitoring and response techniques, there will be an extent to which it is worth and practicable doing so. For example did the shoe fashion retailer separate stock and customers, which might be not considerable for a grocery store. Raman et al. (2001) claim that data accuracy is paramount to the improvement of a retailer's OSA. However, this might be more applicable to a retailer that is very operation focussed or where customers and stock are separated and where logistics activities are consequently not 'disturbed' by customers. At retailers with a high 'natural' stock inaccuracy, it might be more suitable to run a system that can be easily corrected by store employees.

Thonemann et al.'s (2005) call for the application of lean retailing can be found in some cases. Although operations cannot necessarily be designed like manufacturing, the separation between replenishment and sales activities can be seen as a confirmation. Retailer 4 insisted on bringing its products from the backstore out to every individual customer. This matter itself may not be

considered as a lean way, but it was fundamental to the retail concept. Nevertheless, the backroom logistics activities were based on a centrally given system to run them in an optimised way.

The product characteristics strongly affect the accuracy of stock records. Some products such as shoes are relatively easy to keep track of and the scanning process is comparably easy, because almost all products are in standard sized boxes.

Furthermore, the product value is relatively high, which justifies the expense for extra checks and alarm levels for lost stock are low. Due to the higher product value, a company might also be increasingly reluctant to allow every frontline worker to amend stock records. The retail industry in all investigated countries shows a high labour turnover and sub average wages compared to other industry sectors, which may raise the need for more security checks.

Also the availability of substitute products reduces the need for high OSA and stock accuracy. Throughout the study one could observe that smaller stores and those with less opportunity to substitute an OOS product put more emphasis on ensuring data accuracy. One can therefore conclude that the availability of substitutes lowers the pressure to get product availability right all the time.

A different aspect of increasing perceived availability is the responsiveness of logistics system to recover sales in the event of an OOS. Grant et al. (2006) show how availability can increase through suitable substitutes. Retailer 4 operated a system, at which the sales employees could order any product for the customer with free home delivery. To which extent the opportunity of getting an OOS product delivered home increased the perceived availability for customers, would be matter to further research into consumer behaviour. In Campo et al.'s (2000) framework towards individual OOS responses, this opportunity lowers substitution and transaction costs for the customer to be considered.

Looking at the perception of OOS, the direct access to customers provides opportunity to recover the sale. At case 4 sales employees were also directly in contact with the customer during the sales process and could therefore suggest substitutes at the store itself. The same happened at retailer 2, where most customers approached sales employees right away and would therefore potentially not even notice an OOS when the sales person suggests a different product. Within Campo et al.'s (2000) model, the substitution costs are lowered through the direct contact and item switching is encouraged. ECR Europe (2003) states that consumers reduce their willingness to substitute when a product is OOS more often. Although the retailers in cases 4 and 6 sell products that are not shopped for as frequently as groceries, one may wonder whether consumers are satisfied with such a 'recovered sale' as they were with their initial choice and a loyalty reduction towards the retailer can therefore be fully avoided.

In regards to workforce specialisation one might have expected beforehand that a larger store size and a larger workforce leads to a more specialised workforce. Although there are examples in the study that might indicate such, case 4 falsifies this idea. Retailer 4 was the smallest retail organisation in the study; also the store workforce and store sizes were smaller than at other cases. Despite this, the stores had a clear specialisation of its workforce into logistics and sales. The specialisation of the workforce might be rather explained by the complex logistics system, the high labour turnover and the high proportion of part-time workers. Case 4 also stands in contrast to FranklinCovey's (2006) position that retailers should aim for employee loyalty. The retail concept in case 4 relied on recruiting young sales staff to appeal to the target customers. That the recruitment of these young employees -who were often university students- would result in a high labour turnover, was accepted by the retailer. Nevertheless, one can notice that the applied replenishment system and store operations were easy to pick. Hence, it can be concluded that in this case the store operations were adapted to a high labour turnover, rather than aiming to reduce this phenomenon.

Only retailer 5 and 6 expressed an orientation towards broadening the skills of their workforce and developing them to generalists. However, at retailer 6 the staff development of the skills base happened gradually and therefore only more experienced employees could be considered broadly skilled for all operations in-store. Temporary workers were only allocated to backstore operations, as these were easiest to pick up and had little customer contact. Furthermore, the store operations were split into pieces and employees took care of the part of store operations they were allocated to. Despite employees being allocated to different jobs within the store and helping out at other jobs when the customer flow required it, they normally focussed on their part of the operations, which also is considered as a specialisation of the workforce.

DIY retailer 2 had a strong specialisation of its workforce. Particularly the larger store divided clearly between logistics and sales activities. But even within these categories further specialisation occurred. Backstore logisticians took care of their area, the shop floor was mainly replenished by external agency workers; and the sales force had pure sales advisors and sales employees that advised customers and also did some replenishment and administration work.

One store at hypermarket retailer 3 used a specialisation approach by hiring external agency workers for replenishment peak activities. Although these workers were not part of the internal workforce, it is considered as a specialisation of the workforce. Generally, the specialisation of the workforce at the grocery retailers appeared to be less distinct than at the non-grocery retailers. At all grocery retailers the department employees were engaged in a wider range of logistics activities, such as ordering and managing the backstore. The most generalist workforce could be found at the smaller store of convenience retailer 5, where store employees covered all activities from delivery reception to till operations.

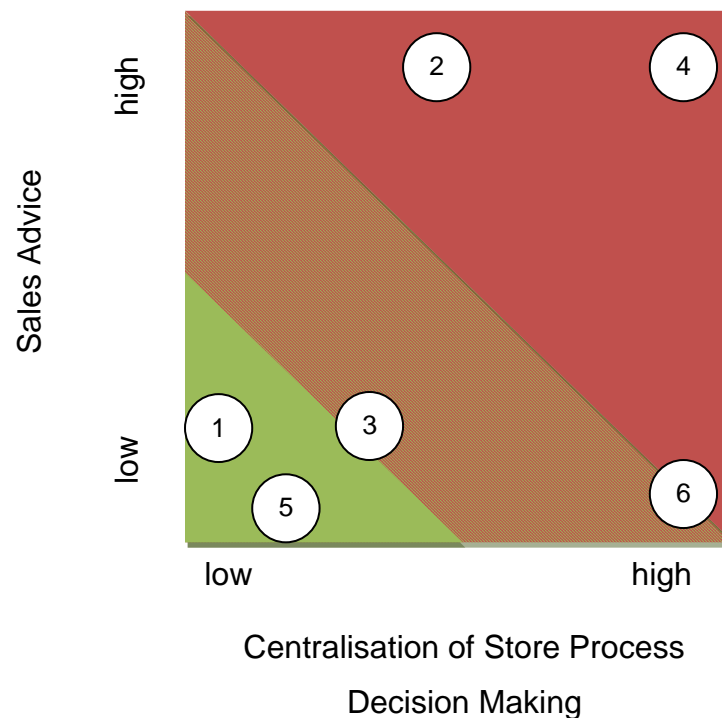
The need for the skilling of store staff, as suggested by Beck and Peacock (2007) and Baxter (2007) can therefore only be confirmed for those retail stores that needed their employees at several places within the store. The specialisation at other retailers however resulted in a qualification gap between



permanently employed managerial positions and replenishers. The replenishment workforce was kept away from any interaction with the system. These cases support Freathy and Sparks (1995), who see a deskilling tendency at the retail shop floor workforce and the skilling only happening for permanent staff and at central functions. The interaction with systems is accordingly widening too. Whilst the replenishers had hardly any interaction with the replenishment system, the next hierarchical level could impact the system.

Access to the systems at the grocery retailers was only given to permanent internal staff, which widened the specialisation gap, because it excluded external replenishers from any other tasks than putting products on the shelf. All specialisation of the workforce was accompanied by a reduction of making changes on the system. This is only consequent, as the employees would leave the system interference to the specialised logistics employees. The interaction between the specialised employee and the system however increased.

Figure 13 illustrates where the six cases are located between the factors sales advice and the level of centralisation of store process decision making. It is noticeable that no retailer can be positioned right in the centre, which indicates that the participating retailers had their replenishment operations focussed to a certain direction.

**Figure 13 Sales Advice and Store Process Decision Making**

As outlined earlier, all grocery retailers can be found in the area of decentralisation. And although all of them are positioned at mid-market, the level of sales advice is comparatively low; only the fresh counters at the larger stores would have a need for specialised advice, but not the main categories of packed goods.

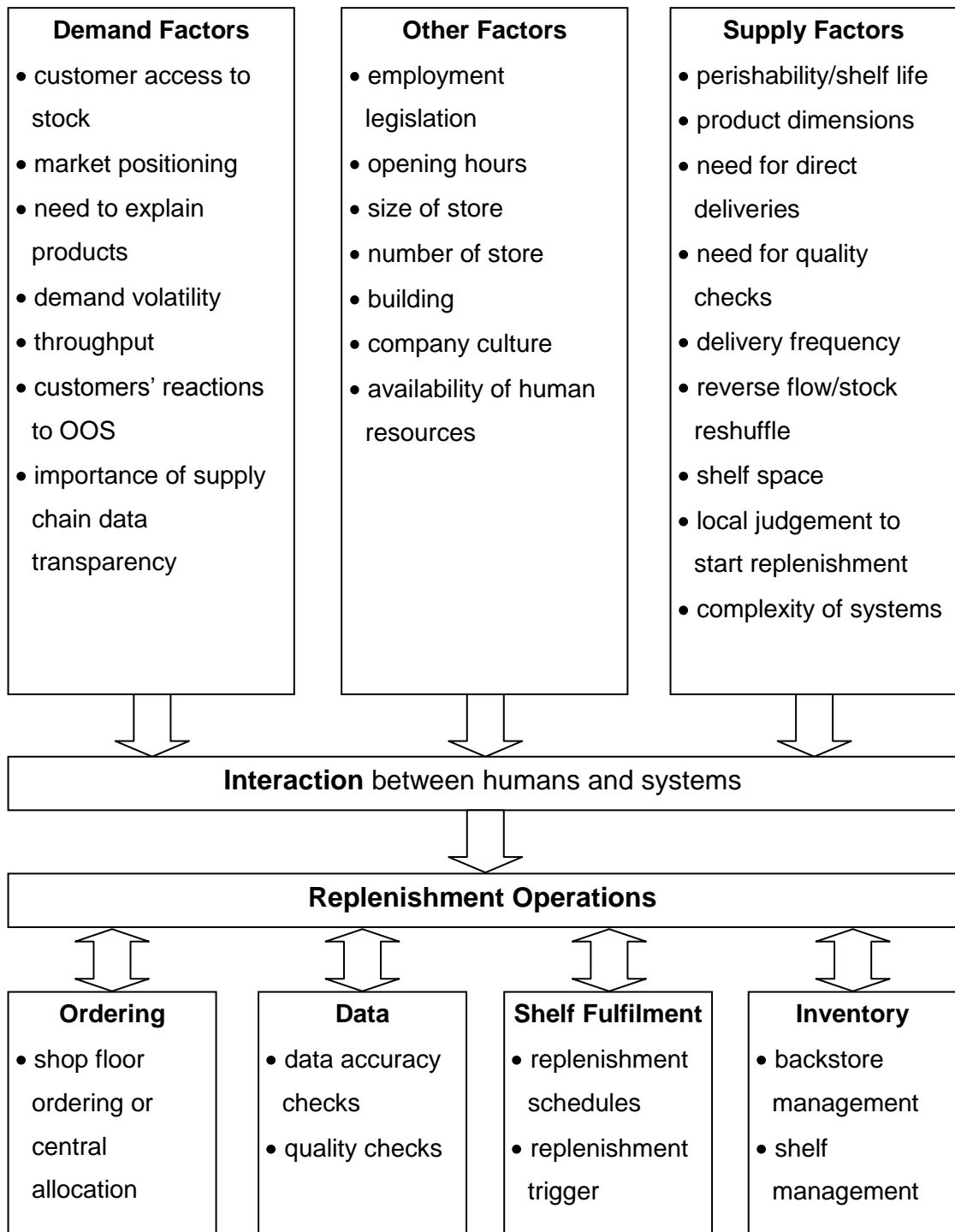
The factors that influence these differences between the retailers can be categorised in factors caused by demand patterns, supply characteristics and other factors. Of course the demand patterns will also have an impact on the supply operations, as retailers will try to satisfy their customers' wishes. Nevertheless, some supply factors are also caused by the nature of the products itself. In the following figure, the factors that affect human and system interaction at the replenishment operations are allocated to their category.

Figure 14 summarises the factors that affect the need for interaction and the type of interaction in store replenishment operations. The factors are categorised in demand factors, supply factors and other factors. Some points

might be discussable into which category they exactly belong to and there are surely interrelated influences between the three categories. Nevertheless, it allows structuring the points that arose during the interviews into a more general framework. The individual points were outlined and explained in detail in the previous cross-case analysis section 6.2. Considering these points leads to more or less need for interaction between human and systems and it does also determine the type of interaction. Throughout the study it was noticed that some employees interact a lot with the systems in place. However, in many instances they could not make any decisions using the system. That type of interaction could therefore work only in one direction. The interaction that is needed to fit demand, supply and other factors shapes the design of the replenishment system at the store level.

The interaction between humans and systems in the replenishment operations stretches over four main tasks of in-store logistics operations: ordering, data accuracy, the physical replenishment of products, and inventory management. The requirements towards the interaction between humans and systems at shop floor operations can differ between the four areas depending on the individual requirements of the retail concept. The ordering can vary between the extremes of store-based ordering and central stock allocation. Looking at the study, different concepts can exist within one company. For example did the German grocery retailer allow the shop floor employees huge influence on the orders for regular listed products; but their influence on amending promotional stock allocations was very limited.

In terms of data accuracy, some product groups will naturally have a higher tendency to be inaccurate than others. The need for accurate data will differ with product value and customers' reactions to OOS; and direct deliveries from suppliers may increase the need for quality and number checks at the store. Furthermore, the frequency and importance of OOS checks differs between products and retailers. Consequently, the effort spent on accurate data records differs, and with it the interaction between humans and systems to keep stock records correct.

**Figure 14 Factors for Interaction in Replenishment Operations**

The actual shelf fulfilment can be a task of the regular store employees or it can be allocated to specialised replenishers. The procedures for the manual

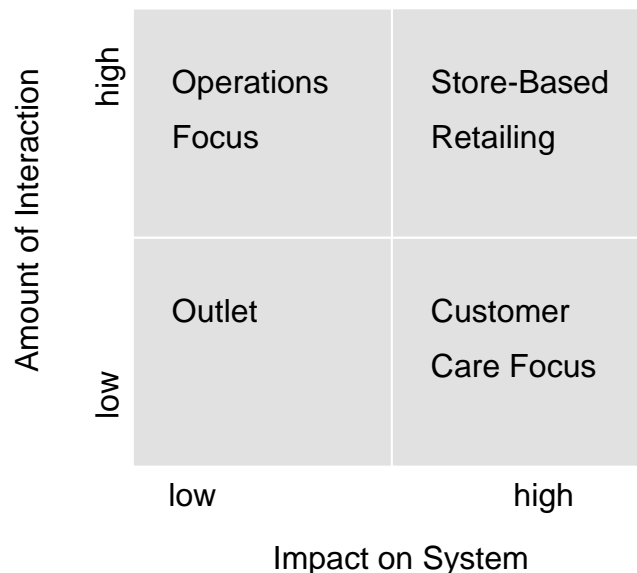
replenishment in-store can be centrally given, for example the replenishment is done when the delivery lorry arrives. At other retailers the store management or department manager would decide when the replenishment is conducted. At the grocery retailers the department employees were setting their replenishment priorities themselves, based on their judgement of the department's appearance and the priorities of products. At the general goods retailer the delivery would contain a high priority cage, which needed to be put on the shelf first. The rest of the delivery was worked through following priority settings that were centrally determined. The grocery retailers also required replenishment from the backstore throughout the day for which the employees' attention and judgement was needed, whereas the general goods retailer replenished once a day when the delivery arrived. The level of flexibility that employees have and their decision making skills therefore vary according to the needs of the replenishment operations.

The inventory management at store level may also be designed to fit interaction requirements of the replenishment operations. The backstore can be operated by specialised logisticians or by the shop floor employees themselves. Also the settings of inventory levels can either be decided by a central function or be in the power of the shop employee. At many retailers much inventory is kept on the shelf itself. The level to which employees can decide on the allocation of shelf space according to current demand and their experience will need to be set depending on how much flexibility is needed in the replenishment operations and how much interaction is required with given standards.

As described the interaction between humans and systems in the replenishment operations at a retail company may vary strongly between the sub-processes and tasks. Also different categories within a store might be managed in individual ways. Thus, a definition of general types needs to be seen as a generalisation and a simplification of reality. However, in order to gain general knowledge from the individual observations of the study, such simplifications need to be accepted. The amount of interaction and the impact of interaction came up repeatedly throughout the comparison of the cases from the

perspective of interactions between humans and systems in store replenishment. Thus the amount and impact are used as the defining variables regarding interaction in the following typology. Figure 15 puts the interaction between humans and systems at store level into a four box matrix. Both axes – how often employees communicate with a system on the y-axis and the extent to which employees can influence system and data on the x-axis– are to be understood as continuums.

**Figure 15 Replenishment Interaction Types**



*Operations Focus:* The operations focus retailer designs its replenishment system in a rather centralised and standardised way. The replenishment is managed to achieve efficient processing for a high throughput of products. The employees concentrate on achieving a high throughput of customers through the standardised process, instead of taking much time for every individual customer and its needs. The interaction between humans and systems appears to be frequent. Also the process of interaction is designed in a lean way, so that every interaction is conducted efficiently and standardised processes exist for every possible action. Unusual and time consuming issues are passed to the

next management level to be taken care of. An example for such a retailer in the study is the general goods retailer 6.

*Store-Based Retailing:* The store-based retailer gives much decision making to the shop floor employees. Local knowledge and judgement are essential for the operations. The store employees need to interact with the system often and can adjust data and orders according to their store's specific needs. Examples for store-based retailing are the grocery retailers in the study.

*Customer Care Focus:* At the customer care focus retailer, interaction with the customer and not the system is in the centre of employees' attention. The replenishment system is designed in a way that the employee does not need to interact with it often, but can for customer orders. In case the customer has a particular request, the employee can use the system to learn whether he can help the customer and place orders on the system. Examples for such customer care focussed companies are the DIY retailer 2 and fashion retailer 4.

*Outlet:* The employees hardly interact with the replenishment system. They put on the shelf what is delivered to the store and they have little or no say in what these products are. Correspondingly, they cannot see which products are coming to be in-store soon or order products for customers. There was no retailer in the study that used this concept; however one could imagine a bargain retailer as an example for such a replenishment system. Furthermore, the way promotions were run at some of the participating retailers in the study followed such an approach, where inventory was pushed into the stores.

The matrix in Figure 15 can be used to categorise the way humans and systems interact at the last 50 metres of retailers' supply chains. Retailers design their replenishment management systems according to their individual requirements arising from demand factors, supply factors and other factors.

Correspondingly they shape their replenishment management systems in a way that suits their needs, as it is shown in Figure 14. Although the individual specifications will be fitted to the individual retailer, the interaction between humans and systems can be summarised into the four types of retailers as they

are presented in Figure 15. Humans and systems interaction at the last 50 metres of the retail supply chain is related to the frequency of interaction and the impact that the interaction can have.

The matrix illustrates the different requirements that retailers have towards the interaction of their store employees with their replenishment systems. These differences cannot only occur between retailers, but also within one retail company, where product groups might need to have dissimilar requirements towards interaction between employees and systems. However, considering an overall supply chain view, the operation of entirely different systems within one retailer may be impracticable and therefore one main approach needs to be followed and only amended to suit other categories within the retailer.



## **7. CONCLUSIONS**

Following the data analysis process, this chapter presents the results and implications of the research project. It starts with summarising the flow of the thesis and outlines the process and results of the data analysis. It then discusses the results of the thesis regarding the initial research questions and the contributions this thesis makes. It further presents the managerial implications, the study's limitations and the opportunities for future research that arise from it.

### **7.1 Thesis Summary**

This thesis started from the point that logistics operations are an essential success factor in retailing. Within the 4P marketing mix, logistics feed mainly into the factor 'place', as only products that are actually physically available to the customers can be purchased by them. In the delivery of these customer service levels there are trade-offs to be considered, mainly between the service level and the corresponding costs.

Logistics customer service levels in retailing are usually measured through the performance in OSA. There are two streams in the research about OSA: consumer research that looks at the impact of OOS on consumers; and the logistics side of the issue that investigates causes and solutions for OOS.

Consumers respond in different ways to OOS, depending on the product, situation and consumer characteristics. Depending on these factors, a consumer will face personal costs to either substitute, change the store, postpone the purchase, or abandon the purchase. Apart from the purchase delay, OOS responses are associated with direct costs to manufacturer and/or retailer. Furthermore, long-term costs in regards to reductions in customer loyalty and brand image occur.

On the logistics side of OOS, past research and industry focussed on the optimisation of the upper supply chain. As a consequence, retail supply chains are already successful in delivering product availability at DC level. Correspondingly, OSA drops on the way from the DC to the shelf. It is assumed that more than seventy percent of OOS are actually caused within the store itself. Therefore, the in-store logistics processes represent a vast potential for further improvement of OSA.

The performance of retail stores generally and also in terms of logistics operations depends to a huge extent on the people that work there. During store operations humans are involved in many tasks, for which they often have to interact with managerial and technological systems, such as handheld ordering devices or guideline manuals. Despite the importance of employees towards store execution, the retail industry is characterised by a particularly high labour turnover and a high proportion of part-time employment.

As the involvement of humans and systems is an important factor for the performance of retail stores and for OSA, the study focuses on this aspect within the store part of the retail supply chain. The area of in-store logistics processes has not been intensively researched in the past, for which reason the research study takes an exploratory stand on the topic. In order to explore the interaction between humans and systems in the retail store, the study needs to establish how store logistics operations look like and how they differ between retail companies. Further, it needs to be investigated at how humans interact with systems in the store. It is then looked at which factors affect the design and the management of these in-store replenishment systems and to which extent the store employees can influence and use the systems for their activities.

The research study being of exploratory nature, an inductive approach is taken. Although the logistics discipline is traditionally dominated by a positivist view, the study takes a qualitative approach to answer the research question. The researcher needs to catch the opinions of the interviewees, which are created in their everyday experience at their workplace. Consequently, the situation of the

interviewees and their organisations has to be considered and answers cannot only be considered an objective expression of an external reality.

As the phenomenon of replenishment management can also only be observed in a real life setting, the research approach applies a case study approach. A multiple case study approach is chosen, which –within the case study approaches– leads to the most generalisable results. Through the use of multiple case studies the research area is widened and results between the retail stores and companies can be compared to gain further insights.

Most research in the area of OSA was conducted in grocery retailing. Therefore, this study uses three grocery and three non-grocery retailers, so that knowledge can be deepened in the area of grocery retailing, but also extended into new areas of non-grocery retailers. Furthermore, the research method is aiming for a heterogeneous sample, which is achieved through the selection of brick and mortar retailers from different sectors and from different countries. The sampling considers high street retailers and includes retailers with multi-channel operations. The sample consisted of one Austrian and one German hypermarket retailer and one British grocery retailer. On the non-grocery side one Austrian DIY retailer, one British fashion retailer and one British general goods retailer were included in the sample.

Data was collected by conducting semi-structured interviews across hierarchical levels at the six retailers. The interview guide included three main categories: replenishment, availability and human resources. Deriving from existing literature, several probes were included in the interview guide. However, apart from covering all three main categories, the researcher majorly followed the flow determined by the interviewees. After the conduction of four pilot interviews with two German and two British participants, the questions were amended to more openness in the interview structure. The interview guide was designed to keep interviews under one hour, as this was estimated to be the maximum timeframe the research could ask for within a busy retail store environment.

The openness of the interviews allows participants to bring in their own opinions and perspectives onto store replenishment, and it also enables them to raise new issues themselves. The data collection at each retailer involved interviews with one central function manager in charge of store processes and interviews with store managers and shop floor employees at two stores at each retailer. The identification of stores and knowledgeable central function employees was done by the retailers. All conducted interviews were transcribed and analysed using the documentary method. This data analysis method is based on a social constructionist perspective. The collected data is considered a social construct of the participants' perception of reality. Thus, the analysis uses the text from the transcribed interviews as a source to disassemble the constructs.

From a qualitative research perspective, every narrative consists of the story and the discourse. The disassembly is therefore done in two separate steps: the rephrasing analysis to investigate 'what' was said in the story; and the reflective analysis to find out 'how' things were said in the discourse. In the rephrasing analysis the researcher rephrased the interview text to distance himself from the content. Whereas in the reflective analysis the researcher looked critically at how answers were constructed and how participants dealt with the topics that were addressed.

The data analysis started with the rephrasing and reflective analysis of each case individually. Only after the analysis of single cases, a cross-case analysis was conducted to identify commonalities and differences between the cases. Furthermore, the cross-case analysis investigates the underlying factors that influence the responses. Eventually, typologies were extracted from the commonalities and differences between the cases.

Demand factors, supply factors and other factors that shape the management of the in-store replenishment systems were portrayed. Also the parts of the in-store replenishment that mattered to the interviewees were shown. These categories were the ordering of goods, the data management, the physical process of refilling shelves and the in-store inventory management. It was

further explained where employees interact with the according systems and how their opportunities vary to influence the system.

Comparing the involved cases, it appeared that the interaction between humans and systems at the store replenishment can be categorised in the amount of interaction that occurs and the impact that employees can have in that system. Resulting from these two matrix axes, four different types of retail companies were identified. Store-based retailers allow their employees a high amount of interaction combined with the opportunity to have a high impact on the system. Retailers that focus on customer care allow their employees to have a high impact on the system, but at the same time they do not spend much time on interaction with replenishment systems, as they are supposed to take care of the customer. In contrast, operations focussed retailers' store employees have little impact on the system, but they interact frequently with it. Store employees at outlet retailers will have little interaction with the system and little impact on the system, as they just replenish whatever is pushed into the store.

### **7.2 Conclusions Regarding the Research Question**

To answer the question about how humans and systems interact in the last 50 metres of the retail supply chain, four underlying aspects were identified to help with the investigation.

#### *1. What do store replenishment operations entail and how are they managed?*

The management of in-store replenishment operations is individually shaped by each retailer to its unique requirements. Depending on the level of freedom that stores enjoy within a retail company, the operations even differ between stores of the same company. To widen the body of knowledge in the area of in-store logistics, every retailer and its store logistics operations are portrayed individually and set into the context of the specific company and environment. The establishment of how in-store replenishment is run in six cases from different retail sectors and backgrounds contributes to the widening of the body

of knowledge in that area, as it was called for in a previous study with a limited focus by Kotzab and Teller (2005).

The required interaction between humans and systems depends on demand factors, other factors and supply factors. This individually arranged interaction affects the design of the replenishment operations, whose four major tasks – ordering, data, shelf fulfilment and inventory– are managed in accordance to the requirements of replenishment and interaction.

Ordering varies between an entirely centralised allocation of products, over centralised allocation with individual ordering for customers, to an ordering where the shop floor employee's input into the system triggers the delivery of products. The ability to order products was dependent on the need for interaction with the system to satisfy customers' expectations.

Accordingly, the store employees have different tasks regarding the data. Their tasks can either be to only maintain data accuracy to enable the central allocation system to run smoothly, or they can set stocking levels themselves. Particularly for perishable products, employees will need to be allowed interaction with the system to individually correct present stock. Also, the checks for data accuracy are arranged in different frequencies and depending on the number of inaccuracies employees may need the ability to interact with the system easily.

Shelf fulfilment can either be the replenishment of entire categories or the restocking of individual products. At those retailers that did not expose their stock to customers, the shelf fulfilment was split into product presentation at the sales floor and replenishment at the backstore. At those retailers that exposed their stock, the shelf fulfilment was arranged aisle by aisle at larger store formats, whilst those with little space for replenishment activities were using individual replenishment. The larger store formats also have longer distances between shelf and backstore, and individual replenishment is therefore often triggered by a customer asking for an OOS product. A mixed approach was used at most retailers, with a replenishment push happening when deliveries

where put onto the shelves and then the replenishment of individual products throughout the day when they became OOS.

Keeping all stock in the backroom correlated with a centralised backstore management approach in the study. Although the handling itself was arranged at store level, the rules for it were centrally given. The grocery retailers all let their sales personnel manage their own backstore space and had little specialisation between logistics and sales. Shelf space however was mainly allocated centrally at the grocery retailers and stores had little flexibility to divert from the planogrammes. Stores at other retailers could arrange products more to their own considerations and demand perceptions. Despite the potential need at all retailers to vary shelf space according to local considerations, the interests of other players in the supply chain controlled this part of store operations at most of the retail chains.

One aspect of the individuality of replenishment operations is the aspired level of OSA. Regardless which hierarchical level within a retail company decides on product availability, this study confirms that retailers do not necessarily aim for 100% as described by Trautrim and Grant (2007). Particularly case 2 and 6 provide evidence that there are more partial interests in a retail organisation than only product availability, which is in line with Mantrala et al. (2009), who establish a similar result for shelf space considerations.

Also the consideration of potential substitutes at retailers and the aim of recovering a sale if the initially requested product is OOS, confirms Grant et al. (2006) statement that available substitutes improve the perceived availability. Making substitutes available, for example at retailer 4 through distance retailing, must therefore be considered in retailers' concepts of product availability. Thus, the inclusion of other fields into the considerations towards store replenishment systems differs between retail companies.

The individuality of replenishment systems and their management leads to the rejection of Salmon's (1989) recommendation to learn from best practice examples. Although there is always a potential learning in looking at other

solutions, a direct transfer from other retailers cannot possibly be recommended, as replenishment systems and the way they are managed need to be tailored to the retailer's concept and position.

### *2. How do store employees interact with replenishment systems?*

Store employees interact at many points along the replenishment process. Where exactly they interact depends on the position of the employee and the individual replenishment system of the retailer. The points where employees and systems interact in store replenishment operations can be categorised in the ordering of goods, the management of data and data accuracy, the shelf fulfilment and the management of inventory at store level. The amount and impact of interaction varies between these four categories depending on the specific needs of the retail company for example in terms of shelf life or the need for sales advice. Generally, interaction levels can either follow a more centralised or a more store-focussed approach. However, corresponding to the retailer's store operations system, the interaction fluctuates strongly between the four segments of ordering, data, fulfilment and inventory. In a centralised approach the interaction does not necessarily have to be less frequent, however it is more standardised and the immediate impact of interaction is lower. A decentralised approach allows the store employees to apply the system to their needs, although they could potentially interact with the system less frequent.

That retailing does necessarily need more skilling, as Beck and Peacock (2007) and Baxter (2007) suggest, cannot be confirmed for all retailers. The interaction with replenishment systems can be designed in a very simple way, and as a consequence easily be picked up and applied. In terms of logistics activities, the suggestion that retailing needs more skilling cannot be supported by this thesis. Although the cases provide examples of especially skilled backstore personnel, there was an overall tendency to separate the physical shelf replenishment from sales activities to less qualified workers. The thesis rather provides evidence for a deskilling in shop floor retail logistics, which becomes more separated from the highly skilled management of these operations. In such an environment, lowly skilled workers are either excluded from interaction with the system, or



they only fulfil basic tasks and interaction with the system is left to the next higher hierarchical level. For those companies where a frequent interaction is needed, interaction needs to be designed very straightforward to the required task with little impact on the overall system. However, the input from store employees is certainly needed for successful retail operations. Even at case 4, where logistics activities are highly centralised, the input in terms of ensuring data accuracy is essential. This confirms Aastrup and Kotzab's (2009) statement that store ordering relies on store staff. Although this is particularly true for decentralised ordering, it can also be confirmed for highly centralised ordering concepts.

In the interaction between employees and replenishment systems, one can see that store employees' decisions have an impact on other parts of the supply chain. This confirms McKinnon et al. (2007) who describe the interrelation regarding OSA. Accordingly, the division between store based causes and shelf based causes for OOS in Gruen and Corsten (2008) may be rejected as an artificial division. Although the distinction between store-based ordering and shelf-based operations surely exists, the influence of multiple factors and players onto store logistics make it difficult to identify the one specific root cause for an OOS. The retail supply chain can be considered as highly interconnected and finding a precise point to blame for an OOS, ignores this wider supply chain. To take the store operations requirements into consideration when designing the retail supply chain may prove more helpful to improve availability.

### *3. Which factors shape the design and the management of store replenishment systems?*

The factors that shape the design of the management of in-store replenishment operations can be summarised in three groups: demand factors, supply factors and other factors. Other factors are presented in the cross-case analysis. Such factors are legal restrictions towards opening hours, labour regulations and the power of labour unions; but also the characteristics of the retail company in terms of number and size of stores. Demand factors are for example shopping patterns, the positioning of the retailer in the market, the customers'

expectations towards OSA, and the need to explain products. Supply factors that influence the store replenishment are product characteristics such as shelf life and dimensions, the available shelf space, direct store deliveries from suppliers and reverse flows of stocks. The importance of specific factors is individual to retailer and retail sector. This confirms van Woensel et al.'s (2007) study into perishable products. Comparing grocery and non-grocery retailers in this study, perishability appears to be one major factor for the design and management of store replenishment.

*4. What level of decision making power do store employees have in the management of replenishment operations? In which way can they influence the replenishment processes?*

The decision making power of employees in store replenishment differs between retailers and store formats. In this study the non-grocery retailers had generally allocated more decision making to central functions, whereas the grocery retailers had more replenishment decisions made at a store level. In terms of ordering goods, the grocery stores could adjust the ordering system to what they wanted, whilst the non-grocery retailers had central systems that were allocating stock throughout their stores. However, there is a strong variation across the four sections ordering, data, fulfilment and inventory. The decision making power of employees can be high in one of them, but small in another segment. Even within a company the influence on replenishment processes can differ, due to perishability and demand volatility.

Grocery stores also decided locally on the time and priorities of replenishment. In contrast to that, the non-grocery retailers mostly replenished upon the arrival of a delivery at a fixed time. The opportunity to change stock on the data systems and the frequency of stock checks differed strongly due to product value and different needs for data transparency. The management of store inventory varied according to centralisation of stock allocation and in regards to a specialisation of the workforce. Some stores had specialised logistics personnel, whilst particularly at the grocery stores, department managers took care of the entire in-store replenishment process. It could also be observed that

products like fruits and vegetables –where local judgement was needed for ordering products– employees had more freedom of making decisions.

However, decentralisation does not always connect to more commitment and sales advice. Retailer 4 had a strongly centralised logistics system, but its sales employees could easily interact with it to satisfy customers.

Throughout the cases, the trend towards centralisation in European retailing, as mentioned by Fernie et al. (2000) could be confirmed. This could be most prominently seen in case 6, where the retail company planned to reshape its replenishment operations. Although the preferred terminology referred to more standardisation, rather than using the terminology of centralisation, the effects of it confirmed Fernie et al.'s (2000) statement.

Decision making was allocated at stores depending on their size. The hypermarkets in the study allocated the ordering to the departments. The convenience retailer had these decisions based at store manager level. Furthermore, the specialisation of the workforce separated employees in regards to making decisions on the replenishment management. Pure sales advisors were kept off replenishment duties; however they could place orders for their customers on the system. Again, the interaction that was needed relates to the influencing factors in demand, supply and other. The way employees manage and influence the replenishment system can be separated in the frequency they interact and the impact their interaction has. As presented in the typologies section, these two variables in the interaction lead to different types of replenishment systems and the human-system interaction within them.

Answering the overall research question, how do humans and systems interact in the last 50 metres of the retail supply chain, one can classify retailers into four replenishment interaction types. According to the amount of interaction between humans and systems, and the impact that this interaction can have on the system, these four types can be identified:-

- Operations-focussed retailers are characterised by a high number of interaction events, but the employees have little influence onto the system.
- At outlet retailers, store employees sell whatever the deliveries contain. They interact very little with the replenishment system and they cannot impose their wishes onto the system.
- Store-based retailers allow their employees a high level of impact onto the replenishment system and a lot of interaction with the system.
- At customer care focussed retailers store employees are kept free for sales activities by limiting their interaction with the replenishment system. At the same time they can have much impact on the system to fulfil their tasks.

### **7.3 Contributions of the Research**

Generally, research can contribute to three areas: the body of knowledge, methodology, and practice. The study's contributions are in all three areas. However, its main aim was to contribute to theory. The opportunity to contribute to methodology and practice only became significant during the research study itself. Whilst there is also some contribution to practice, the contribution to knowledge takes most the space in this section. How the contributions can be used in management practice is shown in the subsequent section 7.4.

### **7.3.1 Contribution to Knowledge**

The contribution to the body of knowledge is achieved by exploring an area of retail logistics that was previously underresearched. Research so far often ignored the store part of the retail supply chain and very little literature existed about store logistics processes. Furthermore, previous research about OSA mostly happened in the grocery sector. The exploration of six retailers from different sectors and countries therefore widens and deepens the knowledge in this area significantly. Furthermore, the study results in a general framework and a typology about the interaction of humans and systems at the management of in-store replenishment systems. Thus, the research pictures a new field of logistics operations and makes it accessible to the academic world.

The extracted retailer typologies are arranged according to the amount of interaction and the potential impact that the store employees' interaction with the replenishment system can have on the system as illustrated in Figure 15. Four replenishment interaction types could be identified: operations focus, store-based retailing, outlet, and customer care focus.

Although classifications of product categories and logistics concepts are widely established, a classification of store replenishment types did not happen before.

As the interaction types are a result of the store operations design, it can be assumed that the different types vary in what their main root causes for OOS are. Research about the root causes for OOS (McKinnon et al., 2007; Fernie and Grant, 2008; Gruen and Corsten, 2008) looked mostly at grocery retailers. The inclusion of non-grocery retailers therefore provided the benefit of widening the perspective on the issue of OOS. The established differences in store interaction types show that OOS causes vary between them according to their retail concept. For example was shrinkage much less of an issue to those retailers that separated customers and stock. Thus, it raises the point that previous OSA research focussed on fast moving consumer goods needs to be amended to be transferable across the interaction types.

The interaction type of a retailer will also influence the best way to improve OSA at a shelf level. Store employees have a varying level of opportunities to influence OSA within their area and OSA improvements must therefore be achieved in different ways depending on the interaction type of the retailer. The responsive techniques that customer care focussed retailers used in the study might not fit another interaction type, because employees there do not have the same opportunity to interact with the system. OSA improvement and OOS recovery therefore need to consider the interaction type.

Besides the extraction of retail replenishment typologies, the study adds on to Trautrimis et al. (2007) in confirming that in-store replenishment is often not seen as a rationale trade-off with OOS. The study reveals that in-store replenishment differs strongly between retailers and that the relationship between replenishment costs and OSA. Although replenishment managers had an understanding of OSA and the potential costs of OOS to the retailer, only one retailer had a standardised setting of replenishment priorities, whilst at most participating retailers the store employees used their optical judgement to identify priorities. The lack of existing replenishment priorities reveals that store operations are still often not fully considered in retail supply chains.

The categorisation of products into replenishment priorities does only make sense if the replenishment systems can actually execute such priorities. Nevertheless, when shop floor employees knew about sales figures, they developed their own priority settings without centrally given rules. The provision of information to employees is therefore essential in a decentralised approach.

Replenishment was often seen as a sheer cost factors and staff levels were set to achieve a subjectively satisfying level of OSA, rather than having an economical trade-off between OOS costs and replenishment costs. Henceforth, the study contributes to this field by showing that replenishment operations are often managed on personal judgement instead of economic models, which strengthens the point of the importance of human resources as a factor for success.

The study also provides examples for Thonemann et al.'s (2005) statement that retailing adapted lean concepts in their operations. However, it may be assumed that the extent of such a lean focus depends on the positioning of the retailer within this study's results frameworks. The effect of labour turnover on successful store ordering and OSA will also depend on the replenishment management that a retailer runs. More standardised and centralised systems can be assumed to cope easier with a high labour turnover than those that rely on local decision making. Throughout the cases, Dawson et al.'s (1995) position that working environments and workforce management differ strongly, could be confirmed.

Also, confirmation could be found for a tendency towards further deskilling in operational tasks at store operations, as previous research by Sparks (1995) and Penn (1995) suggested. It also confirms the tendency of a further specialisation of the workforce, which could be particularly seen at the DIY retailer.

In regards to store execution literature such as Ton (2002) that derives from a manufacturing perspective, the direct application of manufacturing knowledge to retailing needs to be seen in a critical light at store level. Although manufacturing concepts may be found and be applied at the replenishment supply chain, it has to be noted that all participating retail employees at this study mentioned the importance of customer contact during their operations. Even those that ran specialised store operations used concepts from the logistics discipline rather than manufacturing. Nevertheless, retailers applying these concepts did so because of their considerations of their specific market and their shoppers' requirements.

### **7.3.2 Contribution to Methodology**

In its investigation of in-store replenishment processes, this study introduced the documentary method –a qualitative data analysis method– from the area of education studies to logistics research. It thus follows calls for more use of qualitative methods in logistics research (Mangan et al., 2004; Näslund, 2002). The method takes a social constructionist stand and the analysis is based on the disassembling of the interview texts, which is new to logistics research generally and for OSA/OOS particularly. The methodological stand provided the opportunity to access store employees' understanding and perception of the situation. The method allowed probing for whether their understanding of OSA terminology and issues matched with the established understanding in academia. The investigation made it possible to access their own perception deeper and getting beyond the point of stating company policies.

The analysis of the interview transcript on a content level and a discourse level enabled the research to gain this access to a deeper understanding. It had the advantage of catching the content level itself to learn about the replenishment operations, but also to understand the participants' role as a social being in the replenishment activities. Using both layers, the analysis could use two dimensions and provide a new perspective on the collected data.

Due to considerations of access the method had to be adapted to a busy environment with little time for introduction. Thus, the method needed to be made accessible to the research area. As a consequence the study contributes to the development of the research method to a new environment. Therefore, the study also contributes to further development of the documentary method.

### **7.3.3 Contribution to Practice**

The study also contributes to practice, as it provides the first model for the management of in-store replenishment systems. Retail management can use the extracted factors and categories of in-store replenishment operations to analyse their own operations and to identify areas for making their own



replenishment systems more consistent to satisfy customers. The study also provides a matrix for retailers to identify what type of interaction happens at their own organisation and whether the interaction between humans and systems is designed in a suitable way for their retail concept. These aspects are explored further in the following section on managerial implications.

#### **7.4 Managerial Implications**

The study's results provide several points for management considerations in regards to in-store logistics processes. Looking at Figure 14 in the typologies chapter, managers can analyse the situation of their own company. The model can be used as a framework to assess the design of in-store replenishment management. The study also shows that retailers run very different approaches towards in-store replenishment and the human-system interaction. Thus, managers should carefully check the transferability of 'best-practice' OSA examples to the interaction that is needed at their stores.

Further, managers can use the identified categories of in-store replenishment to design the parts of their store operations according to their individual needs. It allows management to define interaction and design of their replenishment systems within each category.

The typologies matrix at Figure 15 can be applied to categorise the retailers' in-store replenishment management according to the amount and impact of the interaction of employees and systems. Locating themselves in the matrix gives them an idea whether they are positioned at the right place, or in other words whether the interaction between humans and systems in their in-store replenishment fits their retail operations model. It also reveals whether employees actually have the interaction allowances they need to execute their job as expected. An OOS sales recovery attempt for example would need to provide certain interaction opportunities for the employees to be operated successfully.

As a part of including in-store logistics operations into the retail supply chain, the study suggests management to either establish replenishment priorities within the company or to provide store employees with the information they need to set these priorities right. Replenishment priorities could for example be based on consumers' expectations (van Woensel et al., 2007) or financial importance (Trautrimis et al., 2007).

In terms of skills in retailing, the study's results show that managers need to consider the required interaction when deciding on skilling employees. A high impact on the system requires a well skilled workforce, as the incorrect use or mistakes would lead to a negative impact too. An increase in skills does not pay off at all types. At an operations focussed retailer it can be more considerable to skill managers at store level and keep systems simple for shop floor employees. Foster et al. (2008) suggest that a high interaction impact increases employee loyalty. However, at an operations focussed retailer this may not be a suitable solution due to the retail concept. Hence, the retailer may prefer to focus on a system design that can cope with a high labour turnover.

Combining the application of the two figures, managers can look at the parts of the in-store replenishment management and define how interaction needs to be shaped within them. The interaction can differ between the parts and retail management therefore need to consider the interaction at each individual part to achieve a store replenishment system that suits the company's need. Categories may have certain needs for human-system interaction and managers would therefore need to decide if categories can be managed through the same approach or whether they are managed through individual approaches. Again, such a decision would need to be based on the consideration what interaction store employees need to achieve their jobs' targets.

## **7.5 Limitations and Future Research**

Like every research project this study is object to certain limitations, which are outlined in this chapter together with opportunities arising from this research.

The research method was selected for its appropriateness to explore an underresearched area. Therefore, the literature base to investigate the problem was relatively small, which means a risk of not illuminating points relevant to the issue. As a response to this risk, the participants were interviewed in a fairly open structure, so that new points could be brought up by them. Nevertheless, a minor risk remains that there are points left that were not raised to their full extent. Only further research into the area of in-store processes can reduce this risk.

Although the number of investigated cases is very large for the selected research method and can be considered sufficiently large for the study's aim of building theory, the sample size of six retailers might not be sufficient for thoroughly generalisable results. The generated framework and the typologies matrix will therefore require further validation and verification, either through a quantitative study testing the suggested models or through an accumulation of further case studies. With the number of retailers from each sector and country being small, there is opportunity to extend the study within the study's area, but also to expand into other retail sectors and markets. Within the study's sample there was no company that could be positioned in the 'outlet' box of the typologies matrix. A case study into such an area would therefore be a particularly interesting extension to the study.

This study approached in-store replenishment operations from an OSA perspective. As mentioned, in-store processes are designed under the consideration of many more factors and partial interests of many players in a retail organisation. Accordingly, an investigation from a different content angle might be worthwhile. Particularly further investigations into the decision making processes in replenishment systems and the design considerations could help to explain the phenomenon of in-store logistics processes.

The case studies also revealed responsive techniques to recover a sale when a customer faces an OOS. Sales and logistics need to be interconnected at store level to provide the opportunity for such responsive actions. This opens a new field for future research in retail logistics. It may also lead into new research about customers' perceptions of such OOS recovery.

Although the applied analysis method allowed an in-depth investigation of the participating retailers' store replenishment, other methodological stands and research methods will provide another perspective on the issue of in-store replenishment. Further investigations into the area may therefore be strongly encouraged to enrich and widen knowledge in this field. The application of an objectivist stand could provide a contrast to the research in this study and add to knowledge about in-store processes. In particular the connection of employees' perception of in-store logistics processes with elements of performance measuring may be considered as particularly attractive for future research.

Two non-grocery retailers in the study already operate online shops. Assuming that online retailing is continuing to grow, it will be of interest to research the effect onto the development of in-store replenishment processes at retailers that involve their stores network in the fulfilment of online orders.

Another limitation arising from the investigated sample is that of a response bias. Those retailers that agreed to participate might have done so due to an interest in OSA and their organisations might be more aware towards the issue. Additionally, all participating retailers were market leaders and one could assume that they already operate some best practices and that they are innovation leaders too. Research into the wider area of the retail sector is therefore recommended.

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# **Appendices**

## **Appendix I – Interview Guide**

### **Interview Guide**

- introduce yourself and the broad scope of the research project
- ensure confidentiality and anonymity
- ask for allowance to audio tape

### **Replenishment Process**

Can you please describe the replenishment process in your store as detailed as possible, from the point when the delivery lorry arrives?

(receipt; transport; processing of transaction; reorder; disposal & recycling)

### **Availability**

How does the store detect an empty shelf?

Can you please describe which product is particularly often not on the shelf? Why do you think that is happening?

How satisfied are you with the product availability of your company / store?

How do you measure product availability?

### **Human Resources**

Please explain, as detailed as possible, your company's human resource policies regarding store execution and shelf filling in particular.

(skilling / training; autonomy; accountability and encouragement; clear measures; consistent communication; labour turnover; full-time / part-time)

Why did you choose working at this company?

### **Demographics**

- Of interviewee: Time in the company; Time in the current position
- Of retailer: Strategic positioning; Number of stores; Number of employees
- Of store: Store size; Number of employees; Store format; Location/market potential

### **End**

- sum up
- ethics contact
- thank you

## Appendix II – Data Collection Schedule

### Case 1

1-0-1	11 <sup>th</sup> December 2009	60 min
1-1-2	30 <sup>th</sup> November 2009	52 min
1-1-3	30 <sup>th</sup> November 2009	16 min
1-2-2	3 <sup>rd</sup> December 2009	48 min
1-2-3	3 <sup>rd</sup> December 2009	16 min

### Case 2

2-0-1	1 <sup>st</sup> December 2009	41 min
2-1-2	1 <sup>st</sup> December 2009	65 min
2-1-3	1 <sup>st</sup> December 2009	15 min
2-2-2	2 <sup>nd</sup> December 2009	30 min
2-2-3	2 <sup>nd</sup> December 2009	56 min

### Case 3

3-1-2	8 <sup>th</sup> April 2010	74 min
3-1-3(1)	8 <sup>th</sup> April 2010	50 min
3-1-3(2)	8 <sup>th</sup> April 2010	58 min
3-1-3(3)	8 <sup>th</sup> April 2010	35 min
3-2-2	8 <sup>th</sup> April 2010	35 min
3-2-3(1)	8 <sup>th</sup> April 2010	42 min
3-2-3(2)	8 <sup>th</sup> April 2010	39 min
3-2-3(3)	8 <sup>th</sup> April 2010	24 min

### Case 4

4-0-1	18 <sup>th</sup> May 2010	52 min
4-1-2	18 <sup>th</sup> May 2010	52 min
4-1-3	18 <sup>th</sup> May 2010	29 min
4-2-2	18 <sup>th</sup> May 2010	47 min
4-2-3	18 <sup>th</sup> May 2010	25 min

### Case 5

5-0-1	30 <sup>th</sup> June 2010	51 min
5-1-2	7 <sup>th</sup> June 2010	53 min
5-2-2	11 <sup>th</sup> June 2010	110 min

### Case 6

6-0-1	29 <sup>th</sup> June 2010	36 min
6-1-2	9 <sup>th</sup> June 2010	71 min
6-2-2	14 <sup>th</sup> June 2010	40 min
6-2-3	14 <sup>th</sup> June 2010	38 min